

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 5,7 e

1. Edition

En

PES 6 A 75 D 410/3 RS 1197
Komb.-Nr. 0 400 466 045

RSV 325-1150 A8B 494-1 L

supersedes
company KHD
engine F 6 L 912

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0
(1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	10,5+0,1	4,4-4,5	0,2(0,35)			
325	8,4-8,6	0,8-1,4	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7				ca. 18	325	8,0	1130	10,5-10,6
	x = 4,8						100	min. 19,5	500	11,5-11,6
ca. 51	9,5	1170-1180					325	8,4-8,6	930	10,9-11,1
2a	4,0	1220-1250					455-515	=2,0		
	1385	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1130	43,5-44,5 (42,0-46,0)	1170-1180*		-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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10.85

A1

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 3,9 b 2

1. Edition

En

PES 4 A 80 D 320 RS 1282 RSV 350-1100 A 2 B 2129-6 R

Komb.-Nr. 9 400 085 257

supersedes -

company MWM

engine D 229-4

Testoil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,20-2,30$ mm (from BDC) $RW = 9,0 - 12,0$ mm
($2,15-2,35$)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	8,7+0,1	4,9-5,0	0,25 (0,4)			
350	6,4-6,6	1,0-1,3	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees rev/min 7 8 9			3 Torque control rev/min 10 11	
	Control rod travel mm 2	Control rod travel mm rev/min 3								
loose	800	0,3-1,0	-	-	-	ca. 21	350	6,0	1100	8,7-8,8
	x = 4,25						100	min. 19,0	500	10,0-10,1
							350	6,4-6,6	900	9,1-9,4
							590-650	= 2,0		
ca. 44	7,7	1140-1150								
2a	4,0	1180-1210								
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8	
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		Control rod travel mm 9
1100	48,5-49,5 (47,0-51,0)	1140-1150*	500	50,0-52,0 (48,0-54,0)	100	19,0-21,0 mm RW	-	-	-
			900	49,0-51,0 (47,0-53,0)					

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 1 g 17

2. Edition

En

PES 4 A 80 D 410/3 RS 1300 RSV 325-1175 A 8 C 657-1 L

Komb.-Nr. 0 400 464 129

supersedes 5.85

company KHD

engine F 4 L 912

tractor DX 3.70

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1175	10,8+0,1	5,8-5,9	0,25(0,4)			
325	8,4-8,6	1,1-1,7	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
000se	800	0,3-1,0	-	-	-	ca. 17	325	8,0	1175	10,8-10,9
	X = 4,0						325	8,4-8,6	500	11,5-11,6
ca. 51	9,8	1215-1225					445-505	2,0	1025	11,1-11,3
2a	4,0	1260-1290								
	1400	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to ... rev/min		rev/min		rev/min		rev/min	
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	cm ³ /1000 strokes 7	8	Control rod travel mm 9	
175	58,0-59,0 (56,5-60,5)	1215-1225*	800	56,0-58,0 (54,0-60,0)	100	120,0-130,0 (117,0-133,0) =19,5-21,0 mm RW	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 n 13

1. Edition

En

PES 6 A 90 D 410 RS 2293
Komb.-Nr. 9 407 083 270

RQV 300-1425 AB 740-1 L

supersedes

company Daimler-Benz

engine: OM 352

118 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15-2,25$
($2,10-2,30$) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	11,0+0,1	7,1-7,2	0,3(0,5)			
300	7,4-7,6	1,0-1,6	0,2(0,45)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1400	15,2-17,8	-	-	-	ca. 14	100	min.9,0	250	0,5-0,7
ca. 58	10,0	1400-1410					300	7,4-7,6	640	3,2-3,6
	4,0	1520-1555					800	max.1,0	1035	5,6-5,8
	1660	0-1,0							1425	8,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1380	71,0-72,0 (69,5-73,5)	1400-1410*	500	54,0-56,0 (52,0-58,0)	100	71,0-81,0 =13,7-14,1 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 6,1 g

6. Edition

En

Testoil-ISO 4113

 PES 6 A 85 D 410/3 RS 2415
 Komb.-Nr. 0 400 836 024

RQ 300/1250 AB 935 DL

supersedes

9.85

company:

KHD

engine:

BF 6 L 913 T

96 kW

2500 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{1,90-2,00}{(1,85-2,05)}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	12,1+0,1	8,0 - 8,1	0,3(0,45)			
300	8,3-8,5	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
800	19,2-20,8	800	20,0	11,1	1295-1310	300	8,4	100	min. 9,8	1250	12,1-12,2
VH = max. 46°				4,0	1370-1400			300	8,3-8,5	800	13,3-13,4
				1500	0 - 1,0			570-610	=2,0	910	13,0-13,2
										1050	12,4-12,7

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation. At 1295-1310 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes/mm
1	2	3	4	5	6	7
1250	80,0 - 81,0 (78,0 - 83,0)	-	800	85,0-87,0 (82,5-89,5)	100	105,0-115,0 (102,0-118,0)

Checking values in brackets

11.85

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Test Specifications Fuel Injection Pumps ① and Governors

PES 5 A 95 D 410 LS 2426 RQV 250-1150 AB 850 DL

Komb.-Nr. 0 400 845 013 = MAN-Nr. 1-7619

1 - 3 - 5 - 4 - 2 je $72^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes

company MAN

D 2555 MX/MXF

engine 141 kW/2300 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,3-1,4$
(1,25-1,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,5 - 8,0	0,4			
	6	3,2 - 4,2				
200	6	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 50	1170 1220 1280 1350	14,4-17,4 9,0-14,0 1,0- 7,8 0	-	-	-	ca. 13	50 150 250 350 410	7,7-11,0 6,6- 9,8 4,2- 7,2 0 - 3,4 0	200 480 800 1180	0,5-1,2 3,2-4,0 5,0-5,4 8,4

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed (2b) limitation intermediate speed (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery (6) Idle switching point	Torque-control (5) travel Control rod travel mm		
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1150	114,5-116,5 (112,5-118,5)	1190-1205*	800 500	114,0-117,0 (112,0-119,0) max. 113,5 (max. 115,5)	100 250	146,5-156,5 7 mm RW Change-over point 180-100 min ⁻¹	1100 500	- 0,3-0,5

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps ① and Governors

PES 5 A 95 D 410 LS 2426 Z RQV 250-1150 AB 850 DL

Komb.-Nr. 0 400 845 021 = MAN-Nr. 1-7555

1 - 3 - 5 - 4 - 2 je $72^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes-

company: MAN

engine: D 2555 M/MF

124 kW/2300 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 1,3-1,4 \\ (1,25-1,45) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,5 - 8,0	0,4			
	6	3,2 - 4,2				
200	6	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 50	1170 1120 1280 1350	14,4-17,4 9,0-14,0 1,0- 7,8 0	-	-	-	ca. 15	50 150 250 350 410	7,7-11,0 6,6- 9,8 4,2- 7,2 0 - 3,4 0	200 480 800 1180	0,5-1,2 3,2-4,0 5,0-5,4 8,4

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	109,5-111,5 (107,5-113,5)	1190-1205*	800 500	112,0-115,0 (110,0-117,0) max. 112,5 (max. 114,5)	100 250	146,5-156,5 =15,7-16,3 mm RW 7 mm RW Change-over point 180-100 min ⁻¹	1100 500	0 0,3-0,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 15,8 b

3. Edition

En

Testoil-ISO 4113

PE 10 A 95 D 610/4 LS 2452 RQV 300-1250 AB 1129 L

Komb.-Nr. 0 400 649 223

1 - 10 - 9 - 4 - 3 - 6 - 5 - 8 - 7 - 2

0 - 27-72 -99 -144-171-216-243-288-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes 4.85

company: KHD

engine: F 10 L 413 F

228 kW (310 PS)

2500 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0 - 2,1$ mm (from BDC)
(1,95-2,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	10,3+0,1	9,1 - 9,3	0,3(0,6)			
300	6,4-6,6	1,2 - 1,6	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1380	15,2-17,8	-	-	-	ca. 18	100	min.8,0	300	1,2-1,3
ca.51	9,3	1290-1300					300	6,4-6,6	500	2,6-2,9
	4,0	1375-1405							1000	5,4-5,6
	1500	0 - 1,0							1300	7,7-7,8
									1380	8,7

Torque control travel a = 0,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1250	90,5 - 92,5 (88,5 - 94,5)	1290-1300 *	800	90,0 - 93,0 (88,0 - 95,0)	100	120,0 - 130,0 (117,0-133,0)	1250	10,3+0,1
							500	10,5+0,1
							940	10,4+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 6,1 e 2

1. Edition

En

PES 6 A 95 D 410 RS 2471
Komb.-Nr. 0 400 876 330

RSV 325-1400 A2C 2205 L

supersedes KHD
company BF 6 L 913 C
engine 125,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,9-2,0$
(1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,9+0,1	8,8-9,0	0,35(0,6)			
325	7,5-7,7	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 22	325	7,1	1400	10,9-11,0
	x = 4,0						100	min. 19,5	500	10,9-11,1
							325	7,5-7,7		
ca. 58	9,9	1440-1450					625-685	2,0		
②a	4,0	1545-1575								
	1675	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to ...) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
LDA 1400	0,7 bar 88,0-90,0 (86,0-92,0)		LDA 850	0,7 bar 78,5-81,5 (76,0-84,0)		100	115,0-125,0 (112,0-128,0) = 15,6-16,0 mm RW		
			LDA 650	0 bar 64,0-66,0 (62,0-68,0)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

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Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

KHD 6,1 e 2

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS 2471 + A2C 2205 L	0,7	0 0,22 0,18	10,9-11,1 10,2-10,3 10,7-10,8 10,5-10,6

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

 WWP 001/4 MAN 9,2 f 1
2. Edition

En

 PES 5 A 95 D 320 LS 2504
Korb.-Nr. 0 400 845 079

RQ 250/1100 AB 1197 R

supersedes 2.85

company: MAN

engine: D 2565 MUL

141 kW/2200 min⁻¹

MAN-Nr. 2-7500

1-3-5-4-2 je 72° ± 0,5° (+ 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

^{1,5 - 1,6}
(1,45 - 1,65)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1 100	11,3+0,1	11,4-11,6	0,3(0,6)			
250	6,4-6,6	1,5-2,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

Test oil ISO 4113

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11		Control rod travel mm 12	
600	15,6-16,4	600	16,0	10,3	1145-1160	250	6,5	100	min. 8,0	1100	11,3-11,4		
				4,0	1195-1225			250	6,4-6,6	600	11,7-11,8		
				1300	0-1,0			370	410=2,0	940	11,5-11,7		
										1015	11,4-11,6		

 Torque-control travel
on flyweight assembly dimension a = 0,40 mm

 Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		Control rod travel mm 7
1100	114,0-116,0 (112,0-118,0)	-		800	115,5-118,5 (113,0-121,0)	100	147,0-157,0 (144,0-160,0)
				500	113,0-116,0 (110,5-118,5)		= 13,7-14,3 mm RW
						250	6,5 mm RW

Checking values in brackets

11.85

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A11

A11

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 7,6 c 2

1. Edition

En

PES 6 A 95 D 410 RS 2522
Komb.-Nr. 9 400 230 014

US-EP/RSV 400-1100 A2B 2055 DL superseded

company John Deere
engine 6466 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,85-1,95
(1,80-2,00) mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,5+0,1	10,1-10,3	0,3 (0,6)			
400	5,9-6,1	1,2-1,6	0,4 (0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	400	5,5	1100 650	10,5+0,1 11,7+0,1
ca. 43	x =						100 400 650-680	min. 19,0 5,9-6,0 = 2,0		
②a	9,5 5,2 1350	1150 1200 0-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 1100	0,8 bar 100,5-102,5 (98,5-104,5)	1150*	LDA 650	0,8 bar 112,5-115,5 (110,5-117,5)	100	165,0-185,0 =19,0-21,0 mm RW	0 400	6,0	
			LDA 550	0 bar 86,0-92,0 (84,0-94,0)	400	12,0-16,0 (10,0-18,0)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

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D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 c 2

- 2 -

Test at n = 550 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A..RS 2522 + RSV..A2B2055DL	0,24	0,10	11,3-11,4 10,4-10,8

Notes.

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 4,1 c 5

1. Edition

En

PES 4 A 80 D 410/3 RS 2523

RSV 325-900 A 1 C 602-2 L

supersedes

KHD

company

F 4 L 913

engine

43,0 kW

Komb.-Nr. 0 400 864 064

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,9-2,0}{(1,85-2,05)}$ mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
880	12,2±0,1	5,1 - 5,2	0,25 (0,4)			
325	9,3-9,5	0,9 - 1,5	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 23	325	8,0	-	-
	X	= 3,25					325	7,9 - 8,1		
ca. 46	11,2	920-930					350 - 410	= 2,0**		
2a	4,0	955-985								
	1110	0,3-1,4								

** Set idle-speed auxiliary spring at 2 mm control-rod travel.
The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	Control rod travel mm 9
880	50,5 - 51,5 (49,0 - 53,0)	920-930 *	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 6,1 d

5. Edition

En

Testoil-ISO 4113

PES 6 A 80 D410/3 RS2527 EP/RSV 325-1150 A8 B2014DL

Komb.-Nr. 0 400 866 084

A8 C2014 L

supersedes 1.85

company: K H D

engine: F6 L912

74kW (102PS)

2300 min⁻¹

tractor DX 110

S 31

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{1,90-2,00}{(1,85-2,05)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,8+0,1	5,6 - 5,7	0,2(0,35)			
325	8,9-9,1	0,9 - 1,5	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7				ca. 21	325	8,5	1150	11,8+0,1
	$x =$								950	12,0+0,2
							325	8,9-9,1	775	12,5+0,2
							490-550	= 2,0	450	12,5+0,2
ca. 56 ⑤	10,8	1190-1200								
	4,0	1255-1285								
	1350	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery Idle		5a Idle stop	
Test oil temp. 40°C (104°F)		Note: charged to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1150	56,0 - 57,0 (54,5 - 58,5)	1190-1200 *	775	54,0 - 56,0 (52,0 - 58,0)	-	-	-	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 6,1 d 1
2. Edition

En

PES6A 85 D 410 RS 2537 RSV 325-1150 A8B2020 DL
Komb.-Nr. 0 400 876 270 A8C2020 DL

supersedes 2.84
company KHD
engine BF 6 L 913
97 kW/2300 min⁻¹ (1)
tractor DX145-S15
107kW/2300 min⁻¹ (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 -2,0
(1,85-2,05) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	11,0+0,1	8,0-8,2	0,3(0,45)			
325	6,8-7,0	1,0-1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca.21	325	5,0		
ca.55	10,0	1190-1200					100	min.19,5		
							325	5,4- 5,6		
							510-570	= 2,0		
2a	4,0	1225-1255								
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat	3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)								
rev/min	cm ³ /1000 strokes	Note changed to) rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(1) LDA 1150	0,7 bar 77,0-78,0 (75,0-80,0)	1190-1200*	LDA 650	0,3 bar 77,0-79,0 (74,5-81,5)	100	120,0-130,0	-	-
LDA 800	0,5 bar 78,0-81,0 (75,5-82,5)		LDA 500	0 bar 61,0-63,0 (58,5-65,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

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B. Governor Settings

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7 x = 6,0	-	-	-	ca. 24	325	6,4	1150	11,0+0,1
ca. 60 ⑤							100	min. 19,5	960	11,7+0,2
							325	6,8-7,0		
	10,0 4,0 1435	1190-1200 1270-1300 0,3-1,4					590-650	= 2,0	500	12,5+0,1

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational speed limitation	③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	
(2) LDA 1150	0,7 bar 79,5 - 81,5 (77,5 - 83,5)	1190-1200*	LDA 800	0,7 bar 88,0 - 91,0 (86,0 - 93,0)	100	120,0-130,0 (117,0-133,0) = 17,4-18,0 mm RW	-	-
			⑥a LDA	0 bar 60,0 - 63,0 (58,0 - 65,0)				

Checking values in brackets

*1 mm less control rod travel than col. 2

Testoil-ISO 4113**D. Adjustment Test for Manifold Pressure Compensator**

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure (g.p.)

Pump/governor	Setting (g.p.)	Measurement (g.p.)	Control rod travel mm (1)
2537 mit 2020DL	0,70	0,37 0,09 0	12,5 - 12,6 12,2 - 12,3 10,6 - 10,9 10,6 - 10,7

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 HAN 10,8 f 1

2. Edition

En

PE 4 A 95 D 420 RS 2556 RSV 350-1100 A 8 B 1120 R
Komb.-Nr. 0 400 674 042 A 8 C 1120 R

supersedes 12.83
company MF-Hanomag
engine D 943

1-2-4-3 je $90^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

** Cold-start test according to VDT-I-420/114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,15-2,25
(2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,0+0,1	9,3-9,5	0,3 (0,6)			
400	7,9-8,1	4,0-5,0	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	400	7,5	1100	10,0-10,1
	x = 3,75						100	min. 19,0	1005	10,4-10,6
							400	7,9-8,1	500	10,9-11,0
ca. 52	9,0	1140-1150					580-640	= 2,0		
②a	4,0	1205-1235					600	max. 1,0		
	1345	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
1100	93,0-95,0 (91,0-97,0)	1140-1150*	700	100,0-103,0 (98,0-105,0)	100	19,5-21,0 mm RW **	-	-	
			500	92,0-94,0 (90,0-96,0)					

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil ISO 4113

Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 HAN 10,8 i 1
2. Edition

En

PE 6 A 95 D 320 RS 2557

RSV 350-1100 A8B1127 R

supersedes 9.83

Komb.- Nr. 0 400 676 159

A8C1127 R

company MF-Hanomag

engine D 963 A/1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,15-2,25 \\ (2,10-2,30) \end{matrix}$ mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,2+0,1	12,4-12,5	0,3(0,6)			
350	6,6-6,8	1,4- 2,0	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Control lever deflection in degrees rev/min 7 8 9			3 Torque control rev/min 10 11	
	Control rod travel mm 2	Control rod travel mm rev/min 3								
loose	800	0,3-1,0	-	-	-	ca. 19	350	6,2	1100	13,2-13,3
		X = 3,75					100	min. 19,5	450	13,2-13,4
							350	6,6-6,8	400	13,5-13,9
							470-530	= 2,0		
ca. 50	12,2	1140-1150								
2a	4,0	1220-1250								
	1370	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note: changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 4a Idle stop rev/min 8		Control rod travel mm 9
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7			
1100	124,0-125,0 (122,0-127,0)	1140-1150*	500	118,0-121,0 (115,5-123,5)		-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 9,6 n 1

1. Edition

En

PE 6 A 95 D 410 LS 2587
Komb.-Nr. 0 400 646 266

RQV 300-1150 AB 1088 L

supersedes -

company KHD

engine F 6 L 413 FW

102,0 kW; 2300 min⁻¹

Tunnelling or mining vehicles

1- 6- 5 - 4 - 3 - 2

0-75-120-195-240-315° ± 0,50° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,50-1,60}{(1,45-1,65)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,0-9,2	7,8 - 8,0	0,3(0,6)			
300	6,2-6,3	1,4 - 2,0	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel rev/min mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1150 1350	15,2-17,8 0 - 1,0	-	-	-	ca. 11	100 300 610-670	min. 7,5 5,9-6,1 =2,0	300 600 1190	1,2-1,3 3,1-3,4 8,5
ca. 64	8,0 4,0	1190-1200 1220-1250				320-400				

Torque control travel a = 0,50 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min	cm³/1000 strokes	rev/min ④a	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	77,5-79,5 (75,5-81,5)	1190-1200 *	800	80,5-82,5 (79,0-84,0)	100	119,0-129,0	1150 800 500	9,0±0,1 9,5±0,1 9,5±0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

Set control-rod stop to contact at 500 min/1

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 12,7 n 1

40

1. Edition

En

PE 8 A 95 D 410 LS 2588
Komb.-Nr. 0 400 646 124

RQV 300-1150 AB 1088 L

supersedes -

company: KHD

engine: F 8 L 413 FW

136,0 kW; 2300 min⁻¹

Tunnelling or mining vehicles

1- 8- 7- 2 - 6 - 5 - 4 - 3

0-45-90-135-180-225-270-315° ± 0,50° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60
(1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,0-9,2	7,8 - 8,0	0,3(0,6)			
300	6,2-6,3	1,4 - 2,0	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 11	100	min. 7,5	300	1,2-1,3
ca. 64	8,0	1190-1200					300	5,9-6,1	600	3,1-3,4
	4,0	1220-1250					610-670	=2,0	1190	8,5
	1350	0 - 1,0				320-400				

Torque control travel a = 0,50 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	77,5-79,5 (75,5-81,5)	1190-1200*	800	80,5-82,5 (78,5-84,5)	100	119,0-129,0	1150	9,0+0,1
							800	9,5+0,1
							500	9,5+0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

Set control-rod stop to contact at 500 min/1

10.85

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Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 KHD 15,8 n 1

1. Edition

En

PE 10 A 95 D 610/4 LS 2589 RQV 300-1150 AB 1047 DL
Komb.-Nr. 0 400 649 219

supersedes -

company KHD

engine F 10 L 413 FW
170 kW; 2300 min⁻¹

1-10- 9- 4- 3 - 6 - 5 - 8 - 7 - 2
0-27-72-99-144-171-216-243-288-315° ± 0,50° + (0,75°)

Test ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,50-1,60}{(1,45-1,65)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,1+0,1	7,9 - 8,1	0,3(0,6)			
300	6,2-6,3	1,4 - 2,0	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 11	100	min. 7,5	300	1,2-1,3
ca. 64	8,0 4,0 1350	1190-1200 1230-1260 0 - 1,0				320-410	300 620-680	6,2-6,3 =2,0	600 1190	3,1-3,4 8,5

Torque control travel a = 0,50 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	78,5-80,5 (76,5-82,5)	1190-1200 *	800	83,0-86,0 (80,5-88,5)	100	116,5-126,5 (113,5-129,5)	1150 500 895 1030	9,1+0,1 9,6+0,1 9,4+0,2 9,1+0,3

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 1 g 12

2. Edition

En

PES 6 A 85 D 410 RS 2591 RSV 325-1150 A 8 C 2020
Komb.-Nr. 0 400 876 320

supersedes 10.84
company KHD
engine BF 6 L 913
117 kW/2300 min⁻¹
tractor DX 7.10

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5 - 2,6 (2,45-2,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1200	12,4+0,1	8,6 - 8,7	0,3(0,45)			
325	7,4-7,6	1,0 - 1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 25	325	7,0	1200	12,4-12,5
	x = 6,0						100	min. 19,5	500	13,5-13,6
							325	7,4-7,6	925	12,9-13,1
ca. 63	11,4	1240-1250					620-680	= 2,0		
2a	4,0	1350-1380								
	1515	0,3 - 1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5		rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
DA 1200	0,7 bar 85,5-86,5 (83,5-88,5)	1240-1250*	LDA 500	0 bar 65,0-67,0 (63,0-69,0)		100	110,0-120,0 (107,0-123,0)	0 - 0	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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D. Adjustment Test for Manifold Pressure Compensator

KHD 1 g 12

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A..RS2591 +RSV..A 8 C 2020	0,70	0 0,28 0,11	13,5 - 13,6 12,2 - 12,3 13,2 - 13,3 12,6 - 12,8

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 19,0 n 2

1. Edition

En

PE 12 A 95 D 610 LS 2590
Komb.-Nr. 0 400 640 107

RQV 300-1150 AB 1047 DL

supersedes -

company: KHD

engine: F 12 L 413 FW

204 kW; 2300 min⁻¹1- 4- 9- 8- 5 - 2 - 11- 10- 3 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,50° + (0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke		1,50-1,60 (1,45-1,65)		mm (from BDC)		
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1150	9,1+0,1	7,9 - 8,1	0,35(0,6)			
300	6,4-6,6	1,4 - 1,8	0,3 (0,5)			

Adjust the fuel delivery; from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1190	15,2-17,8	-	-	-	ca. 14	100	min.8,0	300	1,2-1,3
ca. 64	8,1 4,0 1350	1190-1200 1225-1255 0 - 1,0				320-425	300	6,4-6,6	600 190	3,1-3,4 8,5
						③a				

Torque control travel a = 0,50 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1150	78,5-80,5 (76,5-82,5)	1190-1200 *	800	83,0-86,0 (80,5-88,5)	100	116,5-126,5 (113,5-129,5)		1150 500 900 1030	9,1+0,1 9,6+0,1 9,4+0,2 9,1+0,3

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 1 g 16

2. Edition

En

PES 6 A 85 D 410 RS 2591 RSV 325-1150 A 8 C 2194 L
Komb.-Nr. 0 400 876 326

superseded 4.85
KHD
company BF 6 L 913
engine tractor DX 7.10

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,5-2,6$ mm (from BDC) RW = 9,0 - 12,0 mm
(2,45-2,65)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,4+0,1	8,4-8,5	0,3(0,45)			
325	7,4-7,6	1,0-1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 17	325	7,0	1200	12,4-12,5
		X = 6,0					100	min. 19,5	500	13,5-13,6
							325	7,4-7,6	925	12,9-13,1
							620-630	=2,0		
ca. 54	11,4	1240-1250								
2a	4,0	1350-1360								
	1515	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1200	84,0-85,0 (82,0-87,0)	1240-1250*	-	-	100	17,0-17,5 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 6,1 k

3. Edition

En

PES 6 A 85 D 410/3 RS 2592 RQV 300-1250 AB 1089 L

Komb.-Nr. 0 400 836 026

supersedes 9.82

company: KHD

engine: BF 6 L 913

Test ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

 Port closing at prestroke ^{2,2-2,3}
 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,9+0,	9,1-9,2	0,3(0,45)			
300	6,8-7,0	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca. 14	100 300	min. 8,4 6,8-7,0	250 550 900 1250	0,5-0,7 3,4-3,6 5,2-5,4 8,1
ca. 68	10,9 4,0 1500	1290-1300 1370-1400 0-1,0				325-500 ^{3a}				

Torque control travel a = 0,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1250	0,7 bar 91,0-92,0 (89,0-94,0)	1290-1300*	LDA 800 LDA 500	0,7 bar 86,5-89,5 (84,0-92,0) 0 bar 62,5-65,5 (60,5-67,5)	100	110,0-120,0 (107,0-123,0)	1250 500 800 975	11,9+0 1 12,3+0 1 12,2+0 1 12,0+0 2

Checking values in brackets

* 1 mm less control rod travel than col. 2

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D. Adjustment Test for Manifold Pressure Compensator

KHD 6,1 k

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A..RS 2592 + AB 1089 L	0,7	0 0,40 0,28	12,2-12,3 10,8-10,9 12,0-12,1 11,3-11,5

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 12,7 n
4. Edition

40

En

PE 8 A 95 D 410 LS 2609 RQV 300-1250 AB 1128 L
Kombi.-Nr. 0 400 648 129

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 je 45 ° $\pm 0,5$ ° ($\pm 0,75$ °)

supersedes 9.85
company: KHD
engine: BF 8 L 413 F
235 kW (320 PS)
2500 min⁻¹

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{1,8-1,9}
(1,75-1,95) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	11,6+0,1	11,9-12,1	0,35(0,6)			
300	6,6-6,8	1,6-2,2	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1300	15,2-17,8	-	-	-	ca. 14	100	min. 8,2	320	1,7-1,8
ca. 65	10,6	1290-1300					300	6,6-6,8	600	3,0-3,2
	4,0	1360-1390							1000	5,4-5,6
	1450	0 - 1,0							1300	8,5
						315-420				
						③a				

Torque control travel a = 0,75 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed	Fuel delivery characteristics		Starting fuel delivery	Torque-control	
rev/min	cm ³ /1000 strokes	limitation intermediate speed	high idle speed	cm ³ /1000 strokes	idle switching point	travel	Control rod travel
1	2	3	4	5	6	7	8
LDA	0,7 bar	1290-1300 *	LDA	0,7 bar	100	130,0-140,0	1250
1250	119,0-121,0		750	124,5-127,5		(127,0-143,0)	750
	(117,0-123,0)			(122,5-129,5)		= 14,6-14,8	960
			LDA	0 bar		mm RW	1090
			500	105,0-107,0			
				(103,0-109,0)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

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B5

D. Adjustment Test for Manifold Pressure Compensator

KHD 12,7 n - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 8 A .. LS2609 + .. AB 1128	0,70	0 0,27 0,23	12,4-12,5 11,7-11,8 12,1-12,2 11,7-11,9 ◇

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 KHD 4,1 d 4

1. Edition

En

PES 4 A 85 D 410/3 RS 2638

RSV 325-1400 A 8 C 540-2 L

supersedes

KHD

company BF 4 L 913

engine 35,0 kW

Komb.-Nr. 0 400 864 065

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,5-2,6}
(2,45-2,65) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	11,6+0,1	7,0-7,1	0,3 (0,5)			
325	8,0-8,2	1,0-1,6	0,25 (0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7	-	-	-	ca. 21	325	7,7	1250	11,6-11,7
	$x = 4,75$						100	min. 19,5	500	12,2-12,3
							325	8,1-8,3	1000	12,0-12,2
							630-690	= 2,0		
ca. 60	10,6	1290-1300								
2a	4,0	1390-1420								
	1560	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1250	70,0-71,0 (68,0-73,0)	1290-1300*		800	66,0-68,0 (63,5-70,5)	-	-	-	-
				1000	66,0-68,0 (63,5-70,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 4,1 d 1

2. Edition

En

PES 4 A 85 D 410/3 RS 2638

RSV 325-1150 A 2 C 707-2 L

supersedes 8.85

company KHD

Komb.-Nr. 0 400 864 062

engine BF 4 L 913

67 kW/2300 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,5-2,6} (2,45-2,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	12,7+0,1	8,2 - 8,3	0,3 (0,45)			
325	8,1-8,3	1,0 - 1,6	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3 - 0,7	-	-	-	ca. 21	325	7,7	1000	12,7-12,8
	X = 4,25						100	min. 19,5	500	13,7-13,8
							325	8,1-8,3	800	13,3-13,5
ca. 43	11,7	1040-1050					655 - 715	= 2,0	900	12,9-13,1
②a	4,0	1175-1205								
	1340	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 1000	0,7 bar 81,5 - 82,5 (79,5 - 84,5)	1040-1050	LDA 800	0,7 bar 86,5 - 88,5 (84,0 - 91,0)	100	115,0-125,0 (112,0-128,0) = 18,2 - 18,4 mm RW	-	-	-
			LDA 500	0 bar 61,5 - 63,5 (59,5 - 65,5)					

Checking values in brackets

* 1 mm less control rod travel than col 2

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10.85

D. Adjustment Test for Manifold Pressure Compensator

KHD 4,1 d 1

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 4 A..RS 2638 +RSV..A 2 C 707-2L	0,70	0 0,45 0,29	13,7 - 13,8 12,1 - 12,2 13,3 - 13,4 12,5 - 12,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 1 g 19

1. Edition

En

PES 3 A 85 D 410/3 RS 2642

RSV 325-1250 A 2 C 2168-2 L

supersedes

company

engine

KHD

F 3 L 913

45,0 kW/2500 min⁻¹
tractor DX 3.50

Kornb.-NR. 0 400 863 009

Testoil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,5-2,6) (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,9+0,1	7,1 - 7,2	0,3 (0,5)			
325	7,9-8,1	0,7 - 1,3	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 22	325	7,5	1250	10,9-11,0
	X = 4,0						325	7,9 - 8,1	800	11,3-11,4
ca. 51	9,9	1290-1300					480 -	540 = 2,0	1045	11,0-11,2
2a	4,0	1365-1395								
	1520	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to .) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
1250	70,5 - 71,5 (68,5 - 73,5)	1290-1300*	800	62,5 - 64,5 (60,0 - 67,0)	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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B10

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 7,6 b

4. Edition

En

PES 6 A 100 D 410 RS 3034 RSV 600-1100 A 2 B 2080 L

supersedes 10.83

Komb.-Nr. 0 401 276 049

company John Deere

Use overflow valve 1 413 385 007

engine 6.466 AZ-01
152 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05 mm (from BDC)
(1,90-2,10)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	11,7+0,1	12,9-13,1	0,4			
600	4,5-4,7	1,3-1,7	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 19	600	4,1	-	-
ca. 37							100	min. 19,0		
	10,7	1145-1155					600	4,5-4,7		
	4,0	1195-1225					635-695	= 2,0		
2a	1250	0,3-1,7					800	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to .) rev/min		Note		Idle		Control rod travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9	
LDA 1100	0,7 bar 129,0-131,0 (126,5-133,5)	1145-1155*	LDA 500	0 bar 68,5-71,5 (67,0-73,0)	100	170,0-195,0 = 19,0- 21,0 mm RW		-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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11.85

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 b

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A ..RS 3034 +RSV..A 2 B 2080L	0,29	0,12	2,65-2,75 0,7-1,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

1A

WPP 001/4 KHD 12,6 b 1

2. Edition

En

PE 8 AM 80 D 310 RS 2004 RSV 200-1150 A 4 B 73 DL

Komb.-Nr. 0 405 078 204

supersedes 10.84
KHD
company
engine F 8 L 714 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 mm (from BDC)
(2,10-2,30)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12,0	7,4 - 7,8	0,4			
200	9,0 15,0 9,0	3,9 - 4,7 10,3 - 11,4 2,8 - 3,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel	Control rod travel				Control lever deflection in degrees	rev/min	Control rod travel	rev/min	Control rod travel
1	mm	mm rev/min	4	5	6	7	8	mm	10	mm
ca. 72	1150 1200 1230	16,0 9,0 4,5	without auxiliary spring			ca. 25	200	6,0	1130	0
	1180 1200 1250 1350	11,0-13,0 7,0-10,5 2,2- 4,5 0 - 1,0					100 200 300 400 550	19,0-21,0 5,7- 6,3 3,6- 5,0 0,4- 3,4 0- 1,0	900 700 400	0 0,7 - 0,9 1,1 - 1,3
2a			with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1150	72,0 - 73,0 (70,5 - 74,5)			800	75,0 - 77,0 (37,5 - 78,5)	-	-	-	-
				600	75,5 - 77,5 (74,0 - 79,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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B13

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 12,6 b 2

1. Edition

En

PE 8 AM 80 D 310 RS 2004

RSV 200-1150 A 4 C 73 L

Komb.-Nr. 0 405 078 204

superseded by

company KHD

engine F 8 L 714 A
131,0 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,15-2,25

Port closing at prestroke

(2,10-2,30)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 5
1150	1,5+0,1	7,2-7,3	0,2(0,35)			
200	8,9-9,1	2,8-3,6	0,35(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 20	200	7,0	1150	11,5-11,6
ca. 67	x = 4,0						100	min. 19,5	500	12,8-12,9
	10,5	1190-1200					200	7,4-7,6	800	11,9-12,1
	4,0	1230-1260					435-495	= 2,0		
	1390	0,3-1,4								
②a										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1150	72,0-73,0 (70,5-74,5)	1190-1200*	600	75,5-77,5 (74,0-79,0)	-	-	-	-	
			800	75,0-77,0 (73,0-79,0)					

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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B14

En

Testo: 190413

PES 6 MW 100/320 RS 1025
RQ 750 MW 42
0 403 446 154

supersedes

company RVI

engine: MIDR 06.02.12
100 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

3,00-3,10
(2,95-3,15)

mm (from BDC)

RW 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,5±0,1	13,35-13,55	0,35 (0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation		Idle speed regulation		Torque control	
①		④		⑤		③	
Setting point	Test specifications	Setting point	Test specifications	Setting point	Test specifications	Setting point	Test specifications
rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8
				13,5 4,0 0-1	750-755 795-805 825 VH 32 ± 3		

Torque-control travel
on flyweight assembly dimension a =

550

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	Control rod travel
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /-1000 strokes	rev/min	cm ³ /1000 strokes/mm
1	2	3	4	5	6	7
700	133,5-135,5 (131,5-137,5)				100	80,0-90,0 (77,0-93,0)

Checking values in brackets

11.85

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 12,7t4

En 1. Edition

Test: ISO 4113

PE 8 MW 100/720 LS 1117
RQ 300/1150 MW 61
0 403 548 010

1-8-7-2-6-5-4-3 je 45°

supersedes _

company: KHD

engine: F8L 413 FZ
180 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20
(3,05-3,25) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
650	13,1±0,1	10,8-11,0	0,35(0,6)			
300	8,5-8,6	1,1-1,5	0,35(0,55)			
1150	11,7±0,1		0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max. 46	550 1350	19,2-20,8 0-1,0				ca. 16	100 300	min. 10 8,5-8,6		
ca. 34	10,7 4,0	1200-1210 1275-1305				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
650	108,0-110,0 (106,0-112,0)	1200-1210*	1150	98,0-100,0 (95,0-104,0)	100	130,0-140,0 (127,0-143,0)	1150	11,7±0,1
					300	11,0-15,0 (8,5-17,5)	850	12,4±0,3
					100-230	(80-250)	650	13,1±0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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11.85

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 13,4d2

1. Edition

En

Test ISO 4113

PE 8 MW 100/720 LS 1118
RQ 300/1150 MW 63-1
0 403 548 012
1-8-7-2-6-5-4-3 je 45°

supersedes -

company: KHD

engine: BF 8 L 513

225 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,10-3,20$ mm (from BDC) $RW = 9,0 - 12,0$ mm
(3,05-3,25)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	13,2+0,1	14,3-14,5	0,35 (0,6)			
300	7,0-7,1	1,8-2,2	0,35 (0,55)			
1150	12,1+0,1		0,5 (0,7)			
450	12,0+0,1					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
650	19,2-20,8	650	20,0	11,1 4,0 0-1	1190-1200 1255-1285 1340			100 300	min. 8,5 7,0-7,1 330-400	650 1150 850	13,2-13,3 12,1-12,2 12,9-13,1
VH 46°											

Torque-control travel on flyweight assembly dimension a = 0,40 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
LDA 650	0,9 bar 143,0-145,0 (141,0-147,0)			LDA 1150 LDA 450	0,9 bar 134,0-136,0 (132,0-138,0) 0 bar 111,0-113,0 (109,0-115,0)	100 300	140,0-150,0 (137,0-153,0) 18,0-22,0 (16,0-24,0)

Checking values in brackets

11.85

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B17

517

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
 increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1118 mit MW 63-1	0,9	0 0,31 0,42	13,2-13,3 12,0-12,1 12,2-12,3 12,8-12,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Note: Test elec. unlocked starting fuel delivery (EES) with 24 Volts.

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 13,4d3

En 1. Edition

Testoil-ISO 4113

PE 8 MW 100/720 LS 1128

RQ 300/1150 MW 63

0 403 548 011

1-8-7-2-6-5-4-3 je 45°

supersedes

company KHD

engine: BF 8 L 513
225 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,10-3,20$
(3,05-3,25) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,0+0,1	14,1-14,3	0,35(0,6)			
300	6,5-6,6	1,3-1,7	0,35(0,55)			
1150	12,5+0,1		0,5 (0,7)			
450	11,5+0,1					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm 2		Setting point rev/min 3		Test specifications Control rod travel mm 5		Setting point rev/min 7		Test specifications Control rod travel mm 10		Control rod travel mm 12	
rev/min 1					rev/min 6					rev/min 11	
600	19,2-20,8	600	20,0	11,5 4,0 0-1	1190-1205 1270-1300 1350			300 100 330-400	6,5-6,6 min.8,1	700 150 950	13,0-13,1 12,5-12,6 12,7-12,9

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3		rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/ mm 7
LDA 700	0,99 bar 141,0-143,0 (139,0-145,0)			LDA 1150	0,99 bar 136,0-140,0 (135,0-141,0)	100	135,0-155,0 (132,0-158,0)
				LDA 450	0 bar 107,0-109,0 (105,0-111,0)	300	13,0-17,0 (11,0-19,0)

Checking values in brackets

11.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
LS 1128 mit MW 63	0,99	0 0,30 0,40	13,0-13,1 11,5-11,6 11,8-11,9 12,6-12,7

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 13,4d4

En 1. Edition

Test ISO 4113

PE 8 MW 100/720 LS 1128
RQ 300/1150 MW 63-2
0 403 548 014

1-8-7-2-6-5-4-3 je 45°

supersedes
company KHD
engine BF 8L 513
235 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20
(3,05-3,25) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,6+0,1	14,1-14,3	0,35(0,6)			
300	6,5-6,6	1,3-1,7	0,35(0,55)			
700	13,6+0,1		0,5 (0,7)			
400	11,3-11,4					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ①				Idle speed regulation Setting point ①				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	11,6 4,0 0-1	1190-1205 1255-1285 1350			300 100 330-400	6,5-6,6 min.8,1	1150 700 950 1100	12,6-12,7 13,6-13,7 13,0-13,2 12,6-12,7

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
LDA 1150	0,9 bar 141,0-143,0 (139,0-145,0)		LDA 700	0,9 bar 153,0-155,0 (151,0-157,0)	100	135,0-155,0 (132,0-158,0)
			LDA 450	0 bar 107,0-109,0 (105,0-111,0)	300	13,0-17,0 (11,0-19,0)

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

KHD 13,4d4

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution difference mm (1)
LS 1128 mit MW 63-2	0,48	0,33 0 0,90	13,0-13,1 12,2-12,5 11,3-11,4 13,6-13,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PE 6 P 120 A 320 RS 372-1 RQ 250/1100 PA 417 R
Komb.-Nr. 0 401 846 464

supersedes 5.84

company DAF

engine DKS 1160
235 kW

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 600 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,8-2,9 \\ (2,75-2,95) \end{matrix}$ mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
850	10,9+0,1	17,2-17,4	0,5(0,9)			
250	6,2-6,4	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel	rev/min	Control rod travel	Control rod travel	rev/min	rev/min	Control rod travel	rev/min	Control rod travel	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9	10	11	12
700	15,6-16,4	700	16,0	9,9 4,0 1350	1145-1160 1210-1240 0-1,0	250	6,3	100 250 445-485 = 2,0	min.7,4 6,2-6,4 = 2,0	850 1100	10,9-11,0 10,8-11,0

Torque-control travel on flyweight assembly dimension a = 0 mm Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery idle speed	
②		③a	③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes/mm
1	2	3	4	5	6	7
LDA 850	0,7 bar 172,0-174,0 (169,0-177,0)	-	LDA 600	0 bar 130,0-132,0 (127,0-135,0)	100	300,0-340,0 (296,0-344,0) = 19,5-21,0 mm RW

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 i 9

-2-

Test at n =

600

rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 372-1 + RQ..PA 417 R	0,70	0 0,30 0,26	10,9-11,0 9,8-9,9 10,6-10,7 10,0-10,4

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 VOL 12, G a

7. Edition

En

Testoil-ISO 4113

PE 6 P 110 A 320 RS 141 RQV 200-1100 PA 103/2R
RS141,Z,Y 250-1100 PA 234/2R

supersedes **7.83**
company **Volvo**
engine **TD 120**

**** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.**

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,6-2,7 \\ (2,55-2,75) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	17,9 - 18,7	0,6			2,5 [±] 0,1 ** (max. 2,2-2,9)
600	6	3,2 - 4,2				
	12	17,3 - 18,8				
	15	23,5 - 25,3				
200	6	1,1 - 2,1				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQV .. 103/2R mit 141

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1150	15,5-18,3				ca. 23	100	7,0-10,0	200	1,5-2,3
	1410	0					200	5,0-8,4	500	3,6-4,0
ca. 66	1100	15,0-18,0					300	2,4-5,2	1150	8,3
	1200	7,2-12,6					400	0 - 2,2		
	1260	2,0-9,0					460	0		
	1400	0								

Torque control travel a = mm

Caution: abnorm. sldg-sleeve pos'n = 36,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
LDA 700	0,7 bar 181,0-183,0	1150	LDA 700	0 bar 124,0-127,0	100	390 - 410		
					200	17 - 21 **		
						dispersion max. 2,5		

(increase by $\pm 1,0$ cm³!)

Checking values in brackets

* 1 mm less control rod travel than col. 2

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11.85

RQV..234/2R with 141

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1170	15,0-18,3				ca. 13	100	9,0-11,0	350	1,4-2,0
	1400	0					200	7,2-9,9	650	3,7-4,0
ca. 45	1100	15,0-17,8					300	4,0-6,9	1170	8,3
	1200	6,4-12,0					400	0 -2,8		
	1280	0 -6,2					490	0	-	-
	1360	0				(3a)				

Torque control travel a = — mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,9 bar 181,0-183,0 (178,0-186,0)	1160-1170 *	LDA 700	0 bar 124,0-127,0 (121,0-130,0)	100	340,0-360,0		
					250	11 - 15 dispersion max. 2,5*		

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

RQV .. 234/2R mit 141Z

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1170	15,0-18,3				ca. 13	100	9,0-11,0	350	1,4-2,0
	1400	0					200	7,2-9,9	650	3,7-4,0
ca. 45	1100	15,0-17,8					300	4,0-6,9	1170	8,3
	1200	6,4-12,0					400	0 -2,8		
	1280	0 -6,2					490	0	-	-
	1360	0				(3a)				

Torque control travel a = — mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,9 bar 205,0-207,0	1160-1170*	LDA 700	0 bar 124,0-127,0	100	390 - 410		
					250	11 - 15 dispersion max. 2,5	**	

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

RQV .. 234/2R with 141Y

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1170	15,0-18,3				ca. 13	100	9,0-11,0	350	1,4-2,0
	1400	0					200	7,2-9,9	650	3,7-4,0
ca. 45	1100	15,0-17,8					300	4,0-6,9	1170	8,3
	1200	6,4-12,0					400	0 -2,8		
	1280	0 -6,2					490	0	-	-
	1360	0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar		LDA	0 bar	100	390 - 410		
700	161,0-163,0	1160-1170	700	116,0-119,0	250	11 - 15		
						dispersion max. 2,5		

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure CompensatorTest at n = rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm
141 with 103/2R	0,48-0,50	0,12-0,22	- - -
141 with 234/2R	0,90	0 0,51 0,31	11,3 - 11,4 8,8 - 8,9 10,7 - 10,8 9,3 - 9,5
141Z with 234/2R	0,62-0,66	0,14-0,27	- - -
141Y with 234/2R	0,49-0,52	0,14-0,30	- - -

En

Test Specifications Fuel Injection Pumps **(1A)** and Governors

40

WPP 001/4 MB 10,0 a
2. Edition

En

PE 5 P 100 A 720 RS 265 RSV 350-1000 P1/14
Komb.-Nr. 9 400 087 269
1-2-4-5-3 je $72^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes **7.85**
company Daimler-Benz
engine OM 355-5

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$
($2,75-2,95$) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,9+0,1	11,4 - 11,6	0,35 (0,6)			
350	7,4-7,6	1,5 - 1,9	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	=	=	ca. 24	350	7,0	-	-
	X =						100	min. 19,0		
ca. 53	11,9	1040-1050					350	7,4-7,6		
(2a)	4,0	1095-1125					520 - 580	= 2,0		
	1200	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop		(6) Rotational speed limit		(3a) Fuel delivery characteristics		Starting fuel delivery (5)		(4a) Idle stop	
Test oil temp 40°C (104°F)		Note: changed to) rev/min				Idle		Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	rev/min 9	mm 9
1000	114,0-116,0 (112,0-118,0)	1040-1050*	500	103,0 - 106,0 100,5 - 108,5	100	150,0-170,0 = 18,1-18,5 mm RW	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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11.85

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 DAF 11,6 i 8
5. Edition

En

PE 6 P 110 A 320 RS 372-1

RQ 250/1100 PA 417-1

supersedes 6.85

Komb.-Nr. 0 401 846 463

RQ 250/1100 PA 417

company: DAF

engine: DKTD 1160

191 kW (260 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,0+0,1	13,7-13,9	0,4(0,75)			
250	6,6-6,8	0,7-1,1	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ①				Idle speed regulation Setting point ①				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	11,0 4,0 1350	1145-1160 1220-1250 0 - 1,0	250	6,7	100 250 460-500	min. 7,8 6,6-6,8 = 2,0	850 1100	12,0-12,1 11,9-12,1

Torque-control travel
on flyweight assembly dimension a = 0 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
LDA 850	0,7 bar 137,0-139,0 (134,5-141,5)	-	LDA 600	0 bar 128,0-130,0 (125,5-132,5)	100	245,0-285,0 (241,0-289,0) = 19,5-21,0 mm RW

Checking values in brackets

11.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

DAF 11,6 i 8 - 2 -

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution difference mm (1)
PE 6 P..RS372-1 +..PA417-1 oder ..PA 417	0,70	0 0,30 0,28	12,0-12,1 11,5-11,6 11,8-11,9 11,5-11,7

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 k 16

1. Edition

En

PE 6 P 120 A 320 RS 372-1 RSV 250-1100 P 5 A 508-2
Komb.-Nr. 0 401 876 310
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company DAF
engine DKS 1160
235,0 kW

Testo 130 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
850	10,9+0,1	17,2-17,4	0,5 (0,9)			
250	6,6-6,8	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7	-	-	-	ca. 24	250	5,8	850	11,1-11,2
	X = 5,0						250	6,2-6,4	400	11,1-11,3
							620-680	= 2,0	300	11,4-11,9
ca. 54	9,9	1140-1150								
2a	4,0	1260-1290								
	1425	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to .., rev/min				Idle			
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA 850	0,7 bar 172,0-174,0 (169,0-177,0)	1140-1150*		LDA 600	0 bar 130-132,0 (127,0-135,0)	100	300,0-340 (296,0-344,0)	0 - 0	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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C7

C7

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 K 16 - 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6P.. RS 372-1 + RSV..P5A508-2	0,7	0 0,36 0,28	10,9-11,0 9,8-9,9 10,6-10,7 10,0-10,4

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 P 120 A 720 LS 388 RQV 250-1100 PA 504

Komb.-Nr. 0 402 046 204 = MAN-Nr. 2-7113

0 402 046 205 = MAN-Nr. 2-7111

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company: MAN

D 2566 MKF

engine: 206 kW/2200 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $3,0-3,1$
 $(2,95-3,15)$ mm (from BDC) Cyl. 6

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	11,4+0,1	17,8-18,0	0,5(0,9)			
250	6,2-6,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1500	15,2-17,8	-	-	-	ca. 12	100	min. 7,8	300	1,8-2,1
ca. 66	9,2	1140-1150					250	6,2-6,4	800	5,3-5,6
	4,0	1210-1240							1100	7,9
	1400	0-1,0				365-480				
						③a				

Torque control travel a = 1,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 45°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar	1140-1150*	LDA	0,7 bar	100	205,0-225,0	750	11,4+0,1
750	178,0-180,0		650	171,0-177,0		(201,0-229,0)	1100	10,2+0,1
	(175,0-183,0)			(168,0-180,0)			900	11,0+0,2
LDA	0,7 bar		LDA	0,31 bar	250	12,0-18,0	1000	10,3+0,3
1100	160,0-166,0		500	131,0-137,0		(9,0-21,0)		
	(157,0-169,0)			(128,0-140,0)				
			LDA	0 bar				
			500	104,0-106,0				

Checking values in brackets

(101,0-109,0)

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 29

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution difference mm (1)
PES 6 P..LS 388 +RQV..PA 504	0,70	0 0,31 0,43	11,4-11,5 9,2-9,3 10,3-10,4 10,9-11,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications

Fuel Injection Pumps ②

and Governors

PES 6 P 120 A 720 LS 388

RQ 250/1050 PA 658-8

Komb.-Nr. 0 402 046 266

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

superseded 7.84

company MAN

engine D 2566 MK 279

206 kW/2100 min⁻¹
MAN-Nr. 2-7238

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{3,0-3,1}{(2,95-3,15)}$ mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,8+0,1	18,7-18,9	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ①				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	9,7	1095-1110	250	6,4	100	min.7,9	750	11,8-11,9
VH =	max. 46°			4,0	1175-1205			250	6,3-6,5	1050	10,7-10,8
				1300	0-1,0			340-380	= 2,0	870	11,6-11,8
										935	10,9-11,2

Torque-control travel
on flyweight assembly dimension a = 0,5 mmSpeed regulation: At 1095-1110 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm Control rod travel 7
LDA 750	1,0 bar 187,0-189,0 (184,0-192,0)	-	LDA 650	1,0 bar 178,0-184,0 (175,0-187,0)	100	205,0-225,0 (201,0-229,0)
LDA 1050	1,0 bar 167,0-173,0 (164,0-176,0)		LDA 500	0 bar 113,0-115,0 (110,0-118,0)	250	6,3-6,5 mm RW

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 28

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6P..LS388 + RQ..PA658-8	1,0	0 0,31 0,44	11,8-11,9 9,5-9,6 10,5-10,6 11,2-11,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PES 6 P 120 A 720 LS 388 RQ 300/1100 PA 658-13

Komb.-Nr. 0 402 046 319

supersedes

company: MAN

engine: D 2566 MLUM/US

227,0 kW

MAN-Nr. 2-7697

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1.680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,10}{(2,95-3,15)}$ mm (from BDC) Cyl. 6

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
750	11,6+0,1	18,1-18,3	0,5(0,9)			
300	6,4-6,6	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel	rev/min	Control rod travel	Control rod travel	rev/min	rev/min	Control rod travel	rev/min	Control rod travel	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	10,4	1145-1160	300	6,5	100	min. 8,0	750	12,0-12,1
				4,0	1185-1215			300	6,4-6,6	1100	11,4-11,5
				1400	0-1,0			370-410	2,0	850	11,7-11,9
									-	920	11,4-11,5

Torque-control travel on flyweight assembly dimension a = 0,20 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	4	5	6	7	Control rod travel
LDA	1,0 bar			LDA	1,0 bar	100	225,0-245,0
750	181,0-183,0			650	174,0-180,0		(221,0-249,0)
	(178,0-186,0)				(171,0-183,0)	300	12,0-18,0
LDA	1,0 bar			LDA	0,35 bar		(9,0-21,0)
1100	180,0-184,0			500	140,0-150,0		
	(177,0-187,0)				(137,0-153,0)		
				LDA	0 bar		
				500	111,0-113,0		
					(108,0-116,0)		

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

MAN 11,1 w

- 2 -

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..LS 388 + RQ..PA 658-13	1,0	0 0,22 0,48	11,6-11,7 9,4-9,5 9,7-9,8 11,0-11,3

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PES 6 P 120 A 720 LS 388 RQ 300/1100 PA 658-14

Komb.-Nr. 0 402 046 320

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
MAN
company D 2566 MLUM/CA
engine: 227,0 kW
MAN-Nr. 2-7698

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,4+0,1	18,8-19,0	0,5(0,9)			
300	7,0-7,2	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		Test specifications rev/min 6		Control rod travel mm 8		Test specifications rev/min 10		Control rod travel mm 12	
600	19,2-20,8	600	20,0	11,1	1145-1160	300	7,1	100	min. 8,6	750	12,7-12,8
VH = max. 46°				4,0	1185-1215			300	7,0-7,2	1100	12,1-12,2
				1400	0-1,0			380-420	2,0	850	12,5-12,7
									-	920	12,1-12,4

Torque-control travel
on flyweight assembly dimension a = 0,20 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes/mm 7	
LDA 750	1,0 bar 188,0-190,0 (185,0-193,0)	-		LDA 650	1,0 bar 183,0-189,0 (180,0-192,0)	100	225,0-245,0 (221,0-249,0)
LDA 1100	1,0 bar 190,0-194,0 (187,0-197,0)			LDA 500	0,35 bar 140,0-150,0 (137,0-153,0)	300	12,0-18,0 (9,0-21,0)
				LDA 500	0 bar 110,0-112,0 (107,0-115,0)		

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

MAN 11,1 w 1

- 2 -

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..LS 388 + RQ..PA 658-14	1,0	0 0,25 0,58	12,4-12,5 9,7-9,8 10,0-10,1 11,5-11,8

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PES 6 P 120 A 720 LS 388 RQ 300/1100 PA 658-15

Komb.-Nr. 0 402 046 318

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

super: edes MAN
comr any D 2566 MLUH/CA
engine 192,0 kW
MAN-Nr. 2-7700

1 688 901 019

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 3,0-3,10 \\ (2,95-3,15) \end{matrix}$ mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,1+0,1	15,3-15,5	0,5(0,9)			
300	6,4-6,6	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point		Test specifications		Test specifications		Test specifications		Test specifications		Test specifications	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	9,7	1145-1160	300	6,5	100	min. 8,0	750	11,2-11,3
				4,0	1180-1210			300	6,4-6,6	1100	10,7-10,8
				1400	0-1,0			370-4	10= 2,0	850	11,0-11,2
									-	920	10,7-11,0

Torque-control travel on flyweight assembly dimension a = 0,20 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
LDA 750	1,0 bar 153,0-155,0 (150,0-158,0)			LDA 650	1,0 bar 147,0-153,0 (144,0-156,0)	100	225,0-245,0 (221,0-249,0)
LDA 1100	1,0 bar 162,0-166,0 (159,0-169,0)			LDA 500	0,35 bar 131,0-141,0 (128,0-144,0)	300	12,0-18,0 (9,0-21,0)
				LDA 500	0 bar 111,0-113,0 (108,0-116,0)		

Checking values in brackets

10.85

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 w 2

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..LS 388 + RQ..PA 658-15	1,0	0 0,22 0,35	11,1-11,2 9,7-9,8 10,0-10,1 10,6-10,9

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,1 w 3

1. Edition

En

PES 6 P 120 A 720 LS 388 RQ 300/1100 PA 658-16

Komb.-Nr. 0 402 046 321

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

MAN
company: D 2566 MLUH/US
engine: 177,0 kW
MAN-Nr. 2-7720

Test 0413

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,10}{(2,95-3,15)}$ mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	10,6-10,7	14,5-14,7	0,5(0,9)			
300	6,3-6,5	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm 2		Setting point		Test specifications		Setting point		Test specifications		Control rod travel	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	8,7 4,0 1350	1145-1160 1175-1205 0-1,0	300	6,4	100 300 370-410	min. 7,9 6,3-6,5 2,0 -	750 1100 870 950	10,7-10,8 9,7-9,8 10,5-10,7 9,9-10,2
VH = max. 46°											

Torque-control travel on flyweight assembly dimension a = 0,45 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	Control rod travel mm 3a	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	Control rod travel mm 6
LDA 750	1,0 bar 145,0-147,0 (142,0-150,0)			LDA 650	1,0 bar 141,0-147,0 (138,0-150,0)	100	225,0-245,0 (221,0-249,0)
LDA 1100	1,0 bar 141,0-145,0 (138,0-148,0)			LDA 500	0,35 bar 130,0-140,0 (127,0-143,0)	300	12,0-18,0 (9,0-21,0)
				LDA 500	0 bar 111,0-113,0 (108,0-116,0)		

Checking values in brackets

10.85

C19

BOSCH

Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung
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D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 w 3

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..LS 388 + RQ..PA 658-16	1,0	0 0,25 0,32	10,6-10,7 9,6-9,7 9,9-10,0 10,2-10,5

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 P 120 A 720 LS 388 RQV 250-1100 PA 671

Komb.-Nr. 0 402 046 274, 0 402 046 275

superseded 7.83

company MAN

engine D 2566 MK(F)

206 kW/2200 min⁻¹

Test 180 413

Test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,4+0,1	17,8-18,0	0,5(0,9)			
250	6,2-6,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	rev/min 10	mm (1) 11
max.	1130	15,2-17,8	-	-	-	ca. 12	100 250	min. 7,8 6,2-6,4	300 850 1100	1,7-2,0 6,0-6,2 8,3
ca. 63	9,2 4,0 1350	1140-1150 1205-1235 0-1,0				395-520 (3a)				

Torque control travel a = 1,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control (5) travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 750	0,7 bar 178,0-180,0 (175,0-183,0)	1140-1150*	LDA 500	0,31 bar 131,0-137,0 (128,0-140,0)	100	205,0-225,0 (201,0-229,0)	750 1100 860 990	11,4+0,1 10,2+0,1 11,0+0,2 10,4+0,3
LDA 1100	0,7 bar 160,0-166,0 (157,0-169,0)		LDA 500	0 bar 104,0-106,0 (101,0-109,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 13

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..LS 388 + RQV..PA 671	0,70	0 0,31 0,43	11,4-11,5 9,2-9,3 10,3-10,4 10,9-11,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 P 120 A 720 LS 388 RQV 250-1100 PA 671-1

Komb.-Nr. 0 402 046 277

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

superseded 3.83

company MAN

engine D 2566 MK

235 kW/2200 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testo ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 3,0-3,1 \\ (2,95-3,15) \end{matrix}$ mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	13,1+0,1	21,8-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1130	15,2-17,8	-	-	-	ca. 12	100	min. 7,9	300	1,7-2,0
ca. 64	10,3	1140-1150					250	6,3-6,5	850	6,0-6,2
	4,0	1220-1250							1100	8,3
	1350	0-1,0				395-520				
						③a				

Torque control travel a = 1,8 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 750	1,0 bar 218,0-220,0 (215,0-223,0)	1140-1150*	LDA 500	0,34 bar 144,0-150,0 (141,0-153,0)	100	205,0-225,0 (201,0-229,0)	750	13,1+0,1
LDA 1100	1,0 bar 180,0-186,0 (177,0-189,0)		LDA 500	0 bar 102,0-104,0 (99,0-107,0)			1100	11,3+0,1
							860	12,6+0,2
							985	11,7+0,3

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 14

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 P..LS 388 +RQV..PA 671-1	1,0	0 0,34 0,61	13,1-13,2 9,4-9,5 10,9-11,0 12,5-12,9

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications

Fuel Injection Pumps ① and Governors

PES 6 P 120 A 720 LS 388

RQV 250-1050 PA 671-2

Komb.-Nr. 0 402 046 278

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.83

company: MAN

engine: D 2566 MK/319
235 kW/2100 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{3,0-3,10}
 (2,95-3,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	13,1+0,1	21,8-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1130	15,2-17,8	-	-	-	ca. 12	100 250	min.7,9 6,3-6,5	300 850 1050	1,7-2,0 6,0-6,2 7,7
ca. 62	10,3 4,0 1300	1090-1100 1180-1210 0-1,0				395-520 (3a)				

Torque control travel a = 1,8 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 750	1,0 bar 218,0-220,0 (215,0-223,0)	1090-1100*	LDA 500	0,34 bar 144,0-150,0 (141,0-153,0)	100	205,0-225,0 (201,0-229,0)	750 1050 850 950	13,1+0,1 11,3+0,1 12,6+0,2 11,7+0,3
LDA 1050	1,0 bar 180,0-186,0 (177,0-189,0)		LDA 500	0 bar 102,0-104,0 (99,0-107,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 15

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 P..LS 388 +RQV..PA 671-2	1,0	0 0,34 0,61	13,1-13,2 9,4-9,5 10,9-11,0 12,5-12,9

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 v 5

1. Edition

En

PE 6 P 110 A 320 RS 407-1 RSV 275-1000 P 5 A 508-5
Komb.-Nr. 0 401 876 305

supersedes
company DAF
engine DKCL 1160
155 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,8-2,9) mm (from BDC) RW = 9,0 - 12,0 mm

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,3±0,1	14,0-14,2	0,4(0,75)			
275	7,0-7,2	0,9-1,4	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control lever deflection in degrees rev/min Control rod travel mm 8			3 Torque control rev/min Control rod travel mm 10	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6					
loose	800	0,3-0,7	-	-	-	ca. 23	275	6,6	600	12,5-12,6
	X = 4,5						275	7,0-7,2	1000	11,1-11,3
							675-735	= 2,0	750	12,1-12,3
ca. 48	10,1	1040-1050							850	11,4-11,7
2a	4,0	1160-1190								
	1325	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6		5 Idle stop rev/min Control rod travel mm 8	
	cm ³ /1000 strokes 2								
LDA 600	0,7 bar 139,5-141,5 (137,0-144,0)	1040-1050*		LDA 1000	0,7 bar 115,0-119,0 (112,0-122,0)	100	245,0-265,0 (241,0-269,0)	0	-
				LDA 600	0 bar 137,0-139,0 (134,5-141,5)	275	9,0-14,0 (6,5-16,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

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11.85

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 v 5

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 407-1 + RSV..P 5 A 508-5	0,70	0 0,28	12,3-12,4 12,1-12,2 12,2-12,3

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 o 7

1. Edition

En

PE 6 P 120 A 320 RS 415-1 RSV 250-1000 P5A 508-1
Komb.-Nr. 0 401 876 295
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes...
company DAF
engine DKZ 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 mm (from BDC)
(2,75-2,95)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,5+0,1	20,6-20,8	0,5 (0,9)			
250	6,7-6,9	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control-lever deflection in degrees rev/min Control rod travel mm 7 8 9			3 Torque control rev/min Control rod travel mm 10 11	
loose	800	0,3-0,7	-	-	-	ca. 23	250	6,0	850	12,7-12,8
	x = 4,8						250	6,4-6,6		12,7-12,8
ca. 49	11,5	1035-1045				660-720	250	2,0	400	12,9-13,4
	4,0	1190-1220								
2a	1350	0,3-1,4							300	

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to .) rev/min 3		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6 7		5 Idle stop rev/min Control rod travel mm 8 9	
LDA 850	0,7 bar 206,0-208,0 (203,0-211,0)	1035-1045*		LDA 600	0 bar 140,0-142,0 (137,0-145,0)	100	305,0-345,0 (301,0-349,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testbench 4113

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 o 7

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 415-1 + RSV..P5A 508-1	0,70	0 0,34 0,26	12,5-12,6 10,3-10,5 11,8-11,9 10,6-11,0

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 DAF 11,6 o 8

1. Edition

En

PE 6 P 120 A 320 RS 415-1 RSV 250-1100 P5A 508-2
Komb.-Nr. 0 401 876 296
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes_
company DAF
engine DKX 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,6+0,1	18,7-18,9	0,5 (0,9)			
250	6,7-6,9	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7	-	-	-	ca. 23	250	6,0	850	11,8-11,9
	x = 4,8						250	6,4-6,6	400	11,8-12,0
							640-700	=2,0	300	12,1-12,6
ca. 53	10,6	1135-1145								
②a	4,0	1270-1300								
	1430	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to .) rev/min		Note: changed to .) rev/min		Idle		Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
LDA 850	0,7 bar 187,0-189,0 (184,0-192,0)	1135-1145*	LDA 600	0 bar 140,0-142,0 (137,0-145,0)	100	305,0-345 (301,0-349)	0 (0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

D7

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 o 8

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 415-1 + RSV..P5A 508-2	0,7	0 0,30 0,26	11,6-11,7 10,3-10,5 11,3-11,4 10,8-11,1

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 DAF 11,6 o 9

1. Edition

En

PE 6 P 120 A 320 RS 415-1 Y RSV 250-900 P5A 508
Komb.-Nr. 0 401 876 294
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company DAF
engine DKZ 1160 E

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 mm (from BDC)
(2,75-2,95)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
875	11,4+0,1	18,2-18,4	0,5 (0,9)			
250	6,7-6,9	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel mm 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					rev/min 8	Control rod travel mm 9		rev/min 10	
loose	800	0,3-0,7	-	-	-	ca. 21	250	6,0	875	11,4-11,5
	x = 4,3						250	6,4-6,6	600	12,4-12,5
							395-455	4,0	725	12,0-12,2
ca. 45	10,4	935-945							775	11,7-11,9
2a	4,0	1020-1050								
	1180	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		5 Rotational speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	
LDA 875	0,7 bar 182,0-184,0 (179,0-187,0)	935-945*	LDA 600	0,7 bar 186,0-192,0 (183,0-195,0)	100	305,0-345 (301,0-349,0)	0 -	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 0 9

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 415-1 Y + RSV...P5A 508	0,7	0 0,35 0,26	12,2-12,3 10,3-10,5 11,7-11,8 10,7-11,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 o 10

1. Edition

En

PE 6 P 120 A 320 RS 415-1 Z RSV 250-900 P5A 508
Komb.-Nr. 0 401 876 293
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

superseded by
company DAF
engine DKX 1160 E

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
875	11,0+0,1	17,1-17,3	0,5 (0,9)			
250	6,7-6,9	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 26	250	6,0	875	11,0-11,1
	x = 4,5								600	11,9-12,0
ca. 49	10,0	935-945					250	6,4-6,6	725	11,5-11,7
②a	4,0	1020-1050					395-455	=2,0	775	11,2-11,4
	1180	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
LDA 875	0,7 bar 171,0-173,0 (168,0-176,0)	935-945*	LDA 600	0,7 bar 172,0-178,0 (169,0-181,0)	100	305,0-345,0 (301,0-349,0)	-	-	
			LDA 600	0 bar 140,0-142,0 (137,0-145,0)					

Checking values in brackets

* : mm less control rod travel than col 2

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10.85

D11

D11

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 o 10

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution difference mm (1)
PE 6 P..RS 415-1 Z + RSV..P5A 508	0,7	0 0,30 0,26	11,6-11,7 10,3-10,5 11,1-11,2 10,6-10,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 DAF 11,6 o 11

1. Edition

En

PE 6 P 120 A 320 RS 415-1 Z RSV 250-1100 P5A 508-4
Komb.-Nr. 0 401 876 323
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company DAF
engine DKV 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9
(2,75-2,95) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
650	11,0+0,1	16,7-16,9	0,5 (0,9)			
250	6,5-6,7	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
Loose	800	0,3-0,7	-	-	-	ca. 24	250	5,8	650	11,2-11,3
	x = 5,0						250	6,2-6,4	1090	9,6-9,8
							650-710	=2,0	825	10,6-10,8
ca. 54	8,6	1135-1145							925	9,9-10,2
2a	4,0	1210-1240								
	1370	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA 650	0,7 bar 167,0-169,0 (164,0-172,0)	-		LDA 1090	0,7 bar 147,0-151,0 (144,0-154,0)	100	320,0-360,0 (316,0-364,0)	0 -	-
				LDA 600	0 bar 135,0-137,0 (132,0-140,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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D13

D13

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

600

rev/min decreasing pressure - in bar gauge pressure
increasing

DAF 11,6 o 11

- 2 -

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 415-1 Z + RSV..P5A 508-4	0,7	0 0,29 0,26	11,0-11,1 9,9-10,0 10,7-10,9 10,1-10,5

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 RVI 9,8 a 4

En

2. Edition

PES 6 P 120 A 320 RS 419 RQV 275-1100 PA 495-6

Komb-Nr. 0 402 046 302

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1.680 750 067

supersedes 7.84

company: RVI

engine MIDR 062030

191 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8 - 2,9$
 $(2,75 - 2,95)$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,3-9,4	17,3 - 17,5	0,5 (0,9)			
275	4,6-4,8	1,7 - 2,3	0,8 (1,2)			
Port closing mark 10,5° after port closing cylinder 1						

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2 - 17,8	-	-	-	ca. 10	200	min. 5,0	250	1,0-1,2
ca. 65	8,3 4,0 1350	1155 - 1165 1220 - 1250 0 - 1,0					275 290-400	3,2-3,4	475 900 1100	3,5-4,0 6,4-6,6 8,1
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 173,0-175,0 (170,0-178,0)	1155 - 1165*	LDA 700	0,7 bar 159,0-165,0 (156,0-168,0)	100	140,0-160,0 (136,0-164,0)	-	-
			LDA 500	0 bar 93,0-95,0 (90,0-98,0)	275	3,2-3,4 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

RVI 9,8 a 4

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel mm (1) diminution difference
PES 6 P RS 419 + RQV..PA 495-6	0,70	0 0,27 0,22	9,3 - 9,4 7,2 - 7,3 8,7 - 8,8 7,9 - 8,1

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 d 3

2. Edition

En

PES 6 P 120 A 320 RS 419-2 RQV 275-950 PA 698

Komb.-Nr. 0 402 046 293

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1.680 750 067

supersedes 7.84

company: RVI

engine MIDS 062045

129 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing mark 9.5° after port closing cylinder 1

Port closing at prestroke

2,8-2,9
(2,75-2,95)RW = 9,0 - 12,0 mm
mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
500	7,9-8,0	10,4-10,6	0,5(0,9)			
275	4,3-4,5	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1070	15,2-17,8	-	-	-	ca. 8	200	min. 5,1	275	1,5-1,6
ca. 62	6,3 4,0 1200	1010-1020 1045-1075 0-1,0					275	3,3 - 3,5	500	3,8-4,3
							280-395		800	6,4-6,7
									950	7,6

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed ②b limitation intermediate speed 4a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤ travel Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
500	104,0-106,0 (101,0-109,0)	1010-1020*	950	122,0-128,0 (119,0-131,0)	100	150,0-170,0 (146,0-164,0)	500	7,9-8,0
							950	7,2-7,3
							750	7,5-7,7
					275	3,3-3,5 mm RW	800	7,3-7,6

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

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Test Specifications Fuel Injection Pumps ① and Governors

PES 6 P 120 A 320 I.S 429 RQV 250-1100 PA 676
Komb.-Nr. 0 402 046 285

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.83

company: MAN

engine: D 2566 MKUL
235 kW/2200 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3.0-3.1 mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm
(2.95-3.15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	13,0+0,0	21,5-21,7	0,5(0,9)			
250	6,3-6,5	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1130	15,2-17,8	-	-	-	ca. 12	100	min. 7,9	300	1,7-2,0
ca. 64	10,3	1140-1150				395-520	250	6,3-6,5	800	5,7-5,9
	4,0	1230-1260							1100	8,3
	1350	0-1,0								

Torque control travel a = 1,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	1,0 bar	1140-1150*	LDA	0,29 bar	100	205,0-225,0	750	13,0+0,1
750	215,0-217,0		500	134,0-140,0		(201,0-229,0)	1100	11,3+0,1
	(212,0-220,0)			(131,0-143,0)	250	12,0-18,0	860	12,6+0,2
1100	177,0-183,0		LDA	0 bar		(9,0-21,0)	985	11,7+0,3
	(174,0-186,0)		500	111,0-113,0				
650	206,0-212,0			(108,0-116,0)				
	(203,0-215,0)							

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,4 a 2

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..LS 429 + RQV..PA 676	1,0	0 0,29 0,58	13,0-13,1 9,7-9,8 10,7-10,8 12,4-12,7

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 9,5 a 3 **40**
3. Edition

En

PES 5 P 110 A 820 LS 434 RQV 300-1100 PA 594-1

Komb.-Nr. 0 402 045 024

1 - 3 - 5 - 4 - 2 je 72 ° \pm 0,5 ° (\pm 0,75 °)

supersedes 7.83

company: Daimler-Benz

engine: OM 409

135 kW (184 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{3,0-3,1}{(2,95-3,15)}$ mm (from BDC) Cyl.5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0 \pm 0,1	11,0-11,2	0,4(0,8)			
300	8,1-8,3	1,2-1,8	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 40	100 300	min. 9,5 8,0-8,2	250 530 820 1100	1,0-1,3 3,9-4,2 5,5-5,8 8,2
ca. 60	10,0 4,0 1300	1140-1150 1175-1205 0 - 1,0				320-435 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed rev/min ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min ④ cm ³ /1000 strokes 5		Starting fuel delivery Idle switching point ⑥ rev/min 6 cm ³ /1000 strokes 7		Torque-control ⑤ travel Control rod travel mm 9	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1100	110,0-112,0 (107,0-115,0)	1140-1150*	600	91,0-93,0 (88,0-96,0)	190	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 u 5

1. Edition

En

PE 6 P 110 A 720 RS 441 RSV 250-1200 P 5 A 509-1

Komb.-Nr. 0 401 876 317

supersedes

company DAF

engine DHS 825

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{2,8-2,9}{(2,75-2,95)}$ mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,2+0,1	13,7-14,0	0,4 (0,75)			
250	5,0-5,2	0,7-1,2	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 24	250	4,6	1000	12,4-12,5
	X = 5,0						250	5,0-5,2	400	12,4-12,6
							525-585	= 2,0	300	12,7-13,2
ca. 58	11,2	1240-1250								
②a	4,0	1330-1360								
	1500	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	cm ³ /1000 strokes 7	8	rev/min 9	Control rod travel mm 9
LDA 1000	0,7 bar 136,5-139,5 (134,0-142,0)	1240-1250*	LDA 600	0 bar 91,5-94,5 (89,0-97,0)	100	245,0-285,0 (241,0-289,0)	0 -		-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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D21

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 a 5 - 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P.. RS 441 + RSV..P5A 509-1	0,7	0 0,36 0,27	12,2-12,3 10,1-10,2 11,7-11,8 10,8-11,2

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,4 1 11

2. Edition

En

PES 6 P 110 A 820 LS 442 RQV 300-1100 PA 594-4
Komb.-Nr. 0 402 046 229

supersedes 7.84
company Daimler-Benz
engine OM 407
176 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,15-3,35) mm (from BDC)

Rotational speed rev./min. 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 8
1100	11,7-0,5	12,9-13,1	0,4(0,75)			
300	7,8-8,0	1,4-2,0	0,45(0,75)			
600	-	Sp.4 u. 5	0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev./min Control rod travel mm 2	Control rod travel mm rev./min 3	Degree of deflection of control lever 4	rev./min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev./min 8	Control rod travel mm 9	rev./min 10	mm 11
max. ca. 61	1140 10,7 4,0 1300	15,2-17,8 1140-1150 1180-1210 0 - 1,0	-	-	-	ca. 30 340-470	100 300	min. 9,5 7,8-8,0	250 530 820 1100	1,0-1,2 3,5-3,7 5,0-5,4 7,7

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed (2b) limitation intermediate speed (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery Idle switching point (6)		Torque-control (5) travel	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	129,0-131,0 (126,5-133,5)	1140-1150*	600	113,0-117,0 (110,0-120,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 8.3o 12

1. Edition

En

PE 6 P 100 A 720 RS 447-1

RSV 250-750 P 7A 507-1

supersedes

Komb.-Nr.0 401 876 299

companion DAF

engine DHT 825 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,2-3,3}{(3,15-3,35)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
750	12,7+0,1	14,3-14,5	0,35(0,6)			
250	5,3-5,5	0,9-1,3	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control lever deflection in degrees 7			3 Torque control Control rod travel mm 11	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	
loose	800	0,3-0,7	-	-	-	ca. 17	250	5,4	-	-
	x = 3,75						250	5,3-5,5		
ca. 44	11,7	790-795					250-295	=2,0**		
2a	4,0	810-825								
	950	0,3-1,7 **								

Set idle-speed auxiliary spring at 2 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 4a Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7			
750	142,5-144,5 (140,5-146,5)	790-795 *	-	-	-	250	9,0-13,0 (6,5-15,5)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

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D24

Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 DAF 8,3 911

1. Edition

En

PE 6 P 100 A 720 RS 447 RSV250-1200 P 5 A 509-1

Komb.-Nr. 0 401 876 316

supersedes

company DAF

engine DHT 825

162,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3
(3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	11,4+0,1	11,9-12,1	0,35 (0,6)			
250	5,3-5,5	0,8-1,2	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Control lever deflection in degrees 7			Lower rated speed rev/min 8			3 Torque control rev/min 10		Control rod travel mm 11	
loose	800	0,3-0,7	-	-	-	ca. 24	250	4,9	1000	11,6-11,7	400	11,6-11,8	300	11,9-12,4	
		X = 5,0													
ca. 58	10,4	1240-1250					100	min. 7,0	400	11,6-11,8	300	11,9-12,4			
		4,0													
		1325-1355													
2a	1530	0,3-1,4					540-600	= 2,0							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8		4a Control rod travel mm 9	
LDA 1000	0,7 bar	1240-1250*		LDA 600	0 bar	100	210,0-230,0 (206,0-234,0)	-	-	-	-
	118,5-120,5 (116,5-122,5)				92,5-96,5 (90,0-99,0)						

Checking values in brackets

* 1 mm less control rod travel than col 2

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10.85

E1

E1

D. Adjustment Test for Manifold Pressure Compensator

DAF 8,3 o 11 - 2 -

Test at n = 600 rev/min decreasing pressure – in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6P..RS 447 + RSV..P5A 509-1	0,7	0 0,32 0,23	11,4-11,5 10,4-10,5 11,1-11,2 10,5-10,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 e 2

En

1. Edition

PES 6 P 110 A 720 LS 455
Komb.-Nr. 0 402 046 238

RQV 250-1100 PA 580

supersedes -

company: MAN

engine: D 2566 MTE
206,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,4+0,1	14,6-14,9	0,4(0,75)			
250	7,3-7,5	1,0-1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1140	15,2-17,8	-	-	-	ca. 12	100	min.8,9	300	1,4-1,7
ca. 46	11,4 4,0 1350	1140-1150 1210-1240 0-1,0					250	7,3-7,5	850	5,3-5,6
							340-400=2,0		1100	7,9

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point	Torque-control		
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1100	0,7 bar 146,0-149,0 (143,5-151,5)	1140-1150*	LDA 500	0,2 bar 123,0-127,0 (120,0-130,0)	100	225,0-245,0 (221,0-249,0)		
			LDA 500	0 bar 110,0-113,0 (107,5-115,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,4 e 2

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = ° bar	Control rod travel diminution difference mm (1)
PES 6 P..LS 455 mit RQV..PA 580	0,7	0 0,20	12,4-12,5 11,3-11,4 11,8-11,9

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 e

2. Edition

En

PES 6 P 110 A 720 LS 455

RQV 250-1100 PA 674

Komb.-Nr. 0 402 046 307

supersedes 7.84

company: MAN

 engine: D 2566 MTE
 184 kW/2200 min⁻¹
 MAN-Nr. 2-7323

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BDC) Cyl. 6

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
800	12,8+0,1	15,9-16,2	0,4(0,75)			
250	6,9-7,1	1,1-1,6	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 16	100	min.8,5	300	1,5-1,8
ca. 52	10,5	1140-1150					250	6,9-7,1	800	5,1-5,4
	4,0	1205-1235					340-400 = 2,0		1100	8,8
	1350	0-1,0				③a				

Torque control travel a = 1,3 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 800	0,7 bar 159,0-162,0 (156,5-164,5)	1140-1150*	LDA 650	0,7 bar 160,0-164,0 (157,0-167,0)	100	215,0-235,0 (211,0-239,0)	800	12,8+0,1
LDA 1100	0,7 bar 136,0-140,0 (133,0-143,0)		LDA 500	0 bar 97,0-100,0 (94,5-102,5)			1100	11,5+0,1
							900	12,4+0,2
							1000	11,7+0,3

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,4 e

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution difference mm (1)
PES 6 P..LS 455 + RQV..PA 674	0,70	0 0,28 0,11	12,8-12,9 10,2-10,3 12,1-12,2 10,7-11,0

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 P 110 A 720 LS 455 RQV 250-1100 PA 675

Komb.-Nr. 0 402 046 284

superseded 7.84

company MAN

engine D 2566 MTE
206 kW/2200 min⁻¹

Excavator

MAN-Nr. 2-7235

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,1+0,1	14,7-15,0	0,4 (0,75)			
250	7,0-7,2	1,1-1,6	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 13	100	min.8,6	300	1,4-1,7
ca. 46	11,1 4,0 1350	1140-1150 1220-1250 0-1,0					250 340-400 = 2,0	7,0-7,2	800 1100	5,0-5,2 7,9

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	147,0-150,0 (144,5-152,5)	1140-1150*	-	-	100	225,0-245,0 (221,0-249,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than coi 2

11.85

BOSCH

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,4 e 3

1. Edition

En

PES 6 P 110 A 720 LS 455 RQ 250/1100 PA 743

Komb.-Nr. 0 402 046 312

supersedes...

company MAN

engine D 2566 MTE

206,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,1+0,1	17,8-18,1	0,4 (0,75)			
250	6,7-6,9	1,1-1,6	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 4		rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9		rev/min 10		Torque control rev/min 11		Control rod travel mm 12	
600	19,2-20,8	600	20,0	12,1	1145-1160	250	6,8	100	min. 8,3	1100	13,1-13,2						
				4,0	1205-1235			250	6,7-6,9	600	13,1-13,3						
VH =	max. 46 °			1350	0 - 1,0			340-380	= 2,0								

Torque-control travel
on flyweight assembly dimension a = mmSpeed regulation: At 1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel mm 7	
1100	178,0-181,0 (175,5-183,5)					100		225,0-245,0 (221,0-249,0)	

Checking values in brackets

10.85

E8

BOSCH

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,4 c

3. Edition

En

PES 6 P 120 A 720 LS 457

RQ 750 PA 566

superseded 4.84

company MAN

engine D 2566 MLE

198 kW/1500 min⁻¹

MAN-Nr. 2-7341

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

Komb.-Nr. 0 402 046 250

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	20,2-20,4	0,5(0,9)			
250	6,1-6,3	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
	Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		rev/min 9		Control rod travel mm 12
-	-	-	-	11,5 4,0 900	750-755 776-789 0-1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a = mmSpeed regulation: At 750-755 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		Control rod travel mm 7
700	202,0-204,0 (199,0-207,0)	-	-	-	-	-	-

Checking values in brackets

11.85

Test Specifications Fuel Injection Pumps ② and Governors

PES 6 P 120 A 720 LS 457 RQ 750 PA 661
Komb.-Nr. 0 402 046 267
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.84

company: MAN

engine: D 2566 MLE
198 kW/1500 min⁻¹
MAN-Nr. 2-7341

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,0-3,1}
(2,95-3,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	12,5+0,1	20,2-20,4	0,5(0,8)			
250	6,1-6,3	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
-	-	-	-	11,5 4,0 900	750-755 776-789 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mmSpeed regulation: At 750 - 755 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	4	5	6	7
700	202,0-204,0 (199,0-207,0)	-	-	-	-	-

Checking values in brackets

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,9 a 4
2. Edition

En

PES 6 P 120 A 720 LS 470 RQ 250/1100 PA 658-9
Komb.-Nr. 0 402 046 308
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.84
company MAN
engine D 2866 KUH
265 kW/2200 min⁻¹
MAN-Nr. 2-7530

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,8-2,9}
(2,75-2,95) mm (from BDC) ¹ 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,5	23,8-24,0	0,5(0,9)			
250	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm 2		Setting point		Test specifications		Setting point		Test specifications		Control rod travel	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,3	1145-1160	250	5,3	100	min.6,8	750	12,5-12,6
VH=	max.46°			4,0	1180-1210			250	5,2-5,4	1100	11,3-11,4
				1300	0-1,0			315-355	=2,0	935	12,4-12,6
										990	11,7-12,0

Torque-control travel on flyweight assembly dimension a = 0,65 mm Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	Control rod travel cm ³ /1000 strokes/mm 7
LDA 750	1,0 bar 238,0-240,0 (235,0-243,0)	-		LDA 650	1,0 bar 239,0-245,0 (236,0-248,0)	100	225,0-245,0 (221,0-249,0)
LDA 1100	1,0 bar 213,0-219,0 (210,0-222,0)			LDA 500	0 bar 139,0-141,0 (136,0-144,0)		

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 a 4

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P .. LS 470 +RQ .. PA 658-9	1,0	0 0,10 0,40	12,5-12,6 9,3-9,4 9,6-9,7 11,0-11,4

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,9 a

5. Edition

En

PES6 P 120 A 720 LS 470

RQ 250/1100 PA 684

Komb.-Nr. 0 402 046 288

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 4.85

company MAN

D 2866 KF

265 kW/2200 min⁻¹

MAN-Nr. 2-7355

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{2,8 - 2,9}{(2,75 - 2,95)}$ mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	23,8-24,0	0,5(0,9)			
250	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11		Control rod travel mm 12	
600	19,2-20,8	600	20,0	10,3	1145-1160	250	5,3	100	min.6,8	750	12, -12,		
VH = max. 46°				4,0	1180-1210			250	5,2-5,4	1100	11,3-11,4		
				1300	0-1,0			315-355	= 2,0	935	12,4-12,6		
										990	11,7-12,0		

Torque-control travel
on flyweight assembly dimension a = 0,45 mmSpeed regulation: At 1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
LDA	1,0 bar			LDA	1,0 bar	100	225,0-245,0
750	238,0-240,0			650	239,0-245,0		(221,0-249,0)
	(235,0-243,0)				(236,0-248,0)		
LDA	1,0 bar			LDA	0,4 bar		
1100	214,0-218,0			500	188,0-200,0		
	(211,0-221,0)				(185,0-203,0)		
				LDA	0 bar		
				500	139,0-141,0		
					(136,0-144,0)		

Checking values in brackets

11.85

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 a

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..LS470 + RQ..PA684	1,0	0 0,12 0,40	12,5 - 12,6 9,3 - 9,4 9,6 - 9,7 11,0 - 11,4

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications

Fuel Injection Pumps ②

and Governors

WPP 001/4 MAN 11,9 a 2

2. Edition

En

PES 6 P 120 A 720 LS 770-1 RQ 250/1100 PA 679

Komb.-Nr. 0 402 046 289

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 12.83

company: MAN

engine: D 2866 KUL

265 kW/2200 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$
 $(2,75-2,95)$ mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,7+0,1	23,0-23,2	0,5(0,9)			
250	5,6-5,8	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10 rev/min 9		Torque control rev/min 11		Control rod travel mm 12	
600	19,2-20,8	600	20,0	10,9	1145-1160	250	5,5	100 min. 7,2	750	13,0-13,1			
VH= max. 46°				4,0	1185-1215			250 5,6-5,8	100	11,9-12,0			
				1350	0-1,0			340-380=2,0	965	12,6-12,8			
									1010	12,1-12,4			

Torque-control travel
on flyweight assembly dimension a = 0,4 mmSpeed regulation: At 1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel mm 12	
LDA	1,0 bar			LDA	0,4 bar	100	225,0-245,0		
750	230,0-232,0			500	179,0-181,0		(221,0-249,0)		
	(227,0-235,0)				(176,0-194,0)				
LDA	1,0 bar			LDA	0 bar	250	12,0-18,0		
1100	218,0-224,0			500	128,0-130,0		(9,0-21,0)		
	(215,0-227,0)				(125,0-133,0)				

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 a 2

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..LS 470-1 +RQ..PA 679	1,0	0 0,13 0,40	12,7-12,8 9,4-9,5 9,7-9,8 11,1-11,5

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,9a3
2. Edition

En

PES 6 P 120 A 720 LS 470-1

RQV 250-1100 PA 707

supersede 6.84

Komb.-Nr. 0 402 046 296

company: MAN

Values only apply to test nozzle-and-holder assembly

engine

1 688 901 019 and fuel-injection test tubing 1 680 750 067

D 2866 KUL
265 kW/2200 min⁻¹
MAN-Nr. 2-7512

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9
(2.75-2.95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	12,7+0,1	23,0-23,2	0,5 (0,9)			
250	5,4-5,6	1,2-1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1120	15,2 -17,8	-	-	-	ca. 11	100	min. 7,0	300	1,7-2,0
ca. 65	10,9	1140-1150					250	5,4-5,6	850	6,0-6,2
	4,0	1225-1255					365-425	2,0	1100	8,3
	1350	0 - 1,0				③a				

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed	Fuel delivery characteristics		Starting fuel delivery		Torque-control	
rev/min	cm ³ /1000 strokes	limitation intermediate speed	high idle speed	idle speed	idle switching point	rev/min	Control rod travel	rev/min
1	2	3	4	5	6	7	8	9
LDA 750	1,0 bar 230,0-232,0 (227,0-235,0)	1140-1160*	LDA 650	1,0 bar 231,0 -237,0 (228,0-240,0)	100	225,0 -245,0 (221,0 -249,0)	750	12,7+0,1
LDA 1100	1,0 bar 218,0-224,0 (215,0-227,0)		LDA 500	0 bar 128,0-130,0 (125,0-133,0)			1100	11,9+0,1
							935	12,5+0,2
							1010	12,0+0,3

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

Testoil-ISO 4113

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D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9a3

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P. LS 470-1 + RQV. PA 707	1,0	0 0,40 0,19	12,7 - 12,8 9,4 - 9,5 11,2 - 11,3 9,9 - 10,3

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,9 a 7

En

1. Edition

PES 6 P 120 A 720/3 LS 470-2 RQ 250/1100 PA 684

Komb.-Nr. 0 402 036 050

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1.680 750 067

supersedes -

company: MAN

engine: D 2866 KF/K

265,0 kW

Test 01-190 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	23,8 - 24,0	0,5 (0,9)			
250	5,2-5,4	1,2 - 1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control					
①		Setting point		Test specifications		④		Setting point		Test specifications		⑤		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12				
600	19,2-20,8	600	20,0	10,3	1145-1160	250	5,3	100	min. 6,8	750	12,7-12,8				
VH	= max. 46°			4,0	1180-1210			250	5,2- 5,4	1100	11,3-11,4				
				1300	0 - 1,0			315-	355= 2,0	935	12,4-12,6				
										990	11,7-12,0				

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 a 7 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PES 6 P..LS 470-2 +RQ .. PA 684	1,0	0 0,12 0,40	12,5 - 12,6 9,3 - 9,4 9,6 - 9,7 11,0 - 11,4

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,9 a 8

1. Edition

En

PES 6 P 120 A 720/3 LS 470-2 RQV 250-1100 PA 700
Komb.-Nr. 0 402 036 051

supersedes -

company: MAN

engine: D 2856 KF/K
265,0 kW

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

Testoil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,8-2,9 \\ (2,75-2,95) \end{matrix}$ mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	23,8-24,0	0,5 (0,9)			
250	5,2-5,4	1,2-1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1130	15,2-17,8	-	-	-	ca. 10	100	min. 6,8	300	1,7-2,0
ca. 62	10,3	1140-1150					250	5,2-5,4	850	6,0-6,2
	4,0	1225-1255					360-420	= 2,0	1100	8,3
	1350	0 - 1,0								
						③a				

Torque control travel a = 1,15 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 750	1,0 bar 238,0-240,0 (235,0-243,0)		LDA 650	1,0 bar 239,0-245,0 (236,0-248,0)	100	225,0-245,0 (221,0-249,0)	750	12,5+0,1
LDA 1100	1,0 bar 213,0-219,0 (210,0-222,0)		LDA 500	0,4 bar 191,0-197,0 (188,0-200,0)	250	12,0-18,0 (9,0-21,0)	900	12,1+0,2
			LDA 500	0 bar 139,0-141,0			1000	11,5+0,3

Checking values in brackets

(136,0-144,0)

* 1 mm less control rod travel than col 2

10.85

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 a 8 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P.. LS 470-2 + RQV .. PA 700	1,0	0 0,40 0,24	12,5-12,6 9,3-9,4 11,1-11,2 10,2-10,6

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications

Fuel Injection Pumps ②

and Governors

WPP 001/4 MAN 11,9 a 9

1. Edition

En

PES 6 P 120 A 720/3 LS 470-3 RQ 250/1100 PA 679
Komb.-Nr. 0 402 036 047

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company MAN
D 2866 KUL
engine 265,0 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$
(2,75-2,95) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2.	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,7+0,1	23,0 - 23,2	0,5 (0,9)			
250	5,6-5,8	1,2 - 1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		①		Full-load speed regulation Setting point rev/min 3				④				Idle speed regulation Setting point rev/min 7				⑤				Torque control rev/min 11		③	
		Control rod travel mm 2		rev/min	Control rod travel mm 4	Control rod travel mm 5	rev/min	rev/min	Control rod travel mm 6	rev/min	Control rod travel mm 8	rev/min	Control rod travel mm 9	Control rod travel mm 10	rev/min	Control rod travel mm 12							
600		19,2-20,8		600	20,0	10,9	1145-1160	250	5,7	100	min. 7,2	750	13,0-13,1										
VH = max. 46°						4,0	1185-1215			250	5,6- 5,8	1100	11,9-12,0										
						1350	0 - 1,0			340-	380= 2,0	965	12,6-12,8										
												1010	12,1-12,4										

Torque-control travel
on flyweight assembly dimension a = 0,40 mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1		②		Control rod stop rev/min 3		③a		Fuel delivery characteristics rev/min 4		③b		Starting fuel delivery Idle speed rev/min 6		⑥	
		cm ³ /-1000 strokes 2													
LDA 750		1,0 bar 230,0 - 232,0 (227,0 - 235,0)						LDA 650		1,0 bar 231,0 - 237,0 (228,0 - 240,0)		100		225,0 - 245,0 (221,0 - 249,0)	
LDA 1100		1,0 bar 218,0 - 224,0 (215,0 - 227,0)						LDA 500		0,4 bar 179,0 - 191,0 (176,0 - 194,0)		250		12,0 - 18,0 (9,0 - 21,0)	
								LDA 500		0 bar 128,0 - 130,0 (125,0 - 133,0)					

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 a 9

- 2 -

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..LS 470-3 + RQ..PA 679	1,0	0 0,13 0,40	12,7 - 12,8 9,4 - 9,5 9,7 - 9,8 11,1 - 11,5

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,4 f
2. Edition

En

PES 6 P 100 A 720 LS 471 RQ 250/1100 PA 685
Komb.-Nr. 0 402 046 287

supersede 7.84

company: MAN

engine D 2566 UH/200
147 kW/2200 min⁻¹
MAN-Nr. 2-7454

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,10-3,20}
(3,05-3,25) mm (from BDG) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,3+0,	9,4-9,6	0,35(0,6)			
250	4,9-5,1	1,2-1,8	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
600	15,6-16,4	600	16,0	11,3 4,0 1350	1145-1160 1215-1245 0-1,0	250	5,0	100 min. 6,5 250 4,9-5,1 340-380=2,0		700	12,4-12,5
										1100	12,3-12,5

Torque-control travel on flyweight assembly dimension a = 0 mm Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm ³ /1000 strokes/mm 7	
750	94,0-96,0 (92,0-98,0)	-		500 1100	85,0-88,0 (82,5-90,5) 100,0-104,0 (97,5-106,5)	100	115,0-135,0 (111,0-139,0)

Checking values in brackets

11.85

F1

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,9 a 11

1. Edition

En

PES 6 P 120 A 720/3 LS 470-3 RQV 250-1100 PA 707
Komb.-Nr. 0 402 036 048

supersedes -

company: MAN

engine D 2866 KUL
265,0 kWValues only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{2,8-2,9}{(2,75-2,95)}$ mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	12,7+0,1	23,0-23,2	0,5 (0,9)			
250	5,4-5,6	1,2-1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1130	15,2-17,8	-	-	-	ca. 11	100	min. 7,0	800	1,7-2,0
ca. 65	10,9	1140-1150					250	5,4-5,6	850	6,0-6,2
	4,0	1225-1255					365-425	= 2,0	1100	8,3
	1350	0 - 1,0								
						3a				

Torque control travel a = 0,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 750	1,0 bar 230,0-232,0 (227,0-235,0)		LDA 650	1,0 bar 231,0-237,0 (228,0-240,0)	100	225,0-245,0 (225,0-245,0)	750	12,7+0,1
LDA 1100	1,0 bar 218,0-224,0 (215,0-227,0)		LDA 500	0,4 bar 182,0-188,0 (179,0-191,0)	250	12,0-18,0 (9,0-21,0)	935	12,5+0,2
			LDA	0 bar			1010	12,0+0,3

Checking values in brackets

500 128,0-130,0
(125,0-133,0)

* 1 mm less control rod travel than col. 2

10.85

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D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 a 11 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6P.LS470-3 + RQV.. PA 707	1,0	0 0,40 0,19	12,7-12,8 9,4-9,5 11,2-11,3 9,9-10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,9 a 12

40

1. Edition

En

PES 6 P 120 A 720/3/8 470-3 RQV 300-1100 PA 707-1
Komb.-Nr. 0 402 036 053

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1.680 750 067

supersedes -

company MAN
D 2866 LUL
engine 243,0 kW
MAN-Nr. 2-7738

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,75-2,95)

mm (from BDC)

Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,4+0,1	20,7-20,9	0,5 (0,9)			
300	4,9-5,1	1,2-1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1130	15,2-17,8	-	-	-	ca. 12	100	min.6,5	300	1,7-2,0
ca. 64	10,4	1140-1150					300	4,9-5,1	850	6,0-6,3
	4,0	1225-1255					380-440 = 2,0		1100	8,2
	1350	0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point	Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8
LDA 750	1,0 bar 207,0-209,0 (204,0-212,0)	1140-1150 *	LDA 1100	1,0 bar 216,0-222,0 (213,0-225,0)	100	225,0-245,0 (221,0-249,0)	
			LDA 500	0,44 bar 181,0-191,0 (178,0-194,0)			
			LDA 500	0 bar 130,0-132,0			

Checking values in brackets

(127,0-135,0)

* 1 mm less control rod travel than col 2
10.85

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 a 12 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PES 6P..LS 470-3 + RQV..PA 707-1	1,0	0 0,23 0,44	11,4-11,5 9,0-9,1 9,3-9,4 10,6-10,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

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WPP 001/4 MAN 11,4 g
2. Edition

En

PES 6 P 110 A 720 LS 477 RQ 250/1100 PA 685
Komb.-Nr. 0 402 046 304

supersedes 7.84
company MAN
engine: D 2866 UH/240
177 kW/2200 min⁻¹
MAN-Nr. 2-7539

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,5-3,6} (3,45-3,65) mm (from BDC) Cyl. 6.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,7+0,1	12,3-12,6	0,4 (0,75)			
250	6,0-6,2	1,5-2,0	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point		Test specifications				Test specifications					
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,7 4,0 1350	1145-1160 1210-1240 U-1,0	250	6,1	100 250 370	min.7,6 6,0-6,2 410=2,0	1100 500	11,7-11,8 11,7-11,9

Torque-control travel on flyweight assembly dimension a = 0 mm Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
800	123,0-126,0 (120,5-128,5)	-		1100 500	127,0-133,0 (124,0-136,0) 113,0-119,0 (110,0-122,0)	100 250	110,0-130,0 (106,0-134,0) 15,0-20,0 (12,5-22,5)

Checking values in brackets

11.85

F6

F6

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,4 g 1

1. Edition

En

PES 6 P 110 720 LS 477 RQ 250/1100 PA 685-1

Komb.-Nr. 0 402 046 310

supersedes

company MAN

engine D 2566 UH/200
147,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{3,5-3,6}
 (3,45-3,65) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	10,5+0,1	9,1 - 9,4	0,4 (0,75)			
250	6,0-6,2	1,5-2,0	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	9,5 4,0 1300	1145-1160 1200-1230 0 - 1,0	250	6,1	100 250 370-410	min. 7,6 6,0-6,2 = 2,0	1100 500	10,7-10,8 10,7-10,9

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At 1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
800	91,0-94,0 (88,5-96,5)			1100	103,0-107,0 (100,0-110,0)	100	110,0-130,0 (106,0-134,0)
				500	81,0-85,0 (78,0-88,0)		

Checking values in brackets

10.85

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F7

F7

①

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 MAN 11,9 b

1. Edition

En

PES 6 P 110 A 720 LS 477-1 RQV 300-1100 PA 667-1

Komb.-Nr. 0 402 046 325

supersedes

company MAN

engine: D 2866 E

177,0 kW

MAN-Nr. 2-7681

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,5-3,6$ mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm
(3,45-3,65)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	12,2+0,1	12,3-12,6	0,4 (0,75)			
300	5,6-5,8	1,5-2,0	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1180	15,2-17,8	-	-	-	ca. 17	100	min. 7,2	300	1,2-1,4
ca. 53	11,2	1140-1150					300	5,6-5,8	500	3,3-3,6
	4,0	1195-1225							900	5,9-6,6
	1400	0-1,0							1100	7,6
						330-435				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
800	123,0-126,0 (120,5-128,5)	1140-1150*	1100	128,0-132,0 (125,0-135,0)	100	110,0-130,0 (106,0-134,0)	-	-
			500	118,0-122,0 (115,0-125,0)	300	15,0-20,0 (12,5-22,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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F8

F8

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,9 c

1. Edition

En

PES 6 P 120 A 720 RS 487

RQV 400-1050 PA 750

Komb.-Nr. 0 402 046 314

supersedes

company MAN

Values only apply to test nozzle-and-holder assembly

engine D 2866 LUE

1 688 901 019 and fuel-injection test tubing 1 680 750 067

250,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,8-2,9}
(2,75-2,95) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1050	10,4+0,1	19,4-19,6	0,5(0,9)			
400	4,4-4,6	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1080	15,2-17,8	-	-	-	ca. 18	100	min. 7,5	375	1,1-1,3
ca. 54	9,4	1090-1100					400	4,2-4,4	800	4,6-4,9
	4,0	1135-1165							1050	7,8
	1300	0-1,0				415-515				
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1050	1,0 bar 194,0-196,0 (191,0-199,0)	1090-1100*	LDA 700	1,0 bar 178,0-184,0 (175,0-187,0)	100	225,0-245,0 (221,0-249,0)	-	-
			LDA 500	1,0 bar 171,0-177,0 (168,0-180,0)	400	12,0-18,0 (9,0-21,0)		
			LDA 500	0 bar				

Checking values in brackets

500 139,0-141,0
(136,0-144,0)

* 1 mm less control rod travel than col 2

10.85

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D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 c

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	diminution difference mm (1)
PES 6 P..RS 487 + RQV..PA 750	1,0	0 0,30 0,36	10,4-10,5 9,3-9,4 9,6-9,7 10,0-10,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 9,6 k

4. Edition

En

Testoil-ISO 4113

PE 6 P 100 A 320 LS 805

RQ 1100 PA 440 R

Komb.-Nr. 0 401 846 408

supersedes 2.82

company: Daimler-Benz

engine: OM 401

116 kW (158 PS)

6 - 3 - 5 - 2 - 4 - 1 $\pm 0,50^\circ$ 0 -45 -120-165-240-285 $^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $3,40-3,50$ mm (from BDC) Cyl. 6
 $(3,35-3,55)$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,4	10,0 - 10,2	0,3(0,6)			
	+0,1					
350	7,8-8,0	2,3 - 2,8	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
-	9,4 4,2 1300	1120-1125 1160-1170 0 - 1	-	-	-	-	-	-	-	-
						3a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1050	100,0-102,0 (98,0-104,0)	1120-1125*	-	-	100 - 1165	110,0-130,0 - 4,2 mm R/W dispersion max.4 (6)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 MB 12,8 b 3

2. Edition

En

PE 8 P 100 A 320 LS 810 RQV 300-1250 PA 227 R

Komb.-Nr. 0 401 848 041

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je $45^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$

supersedes 9.84

company: Daimler-Benz

engine OM 402

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $3,4-3,5$ mm (from BDC) cyl. 8
(3.35-3.55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 0
1250	10,3+0,1	10,0-10,2	0,3(0,6)			
300	7,4-7,6	1,7-2,3	0,3(0,5)			
600	-	C, Sp. 4 u. 5	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1290	15,2-17,8	-	-	-	ca. 12	100 300	min. 9,0 7,4-7,6	250 550 850 1250	0,7-1,0 3,3-3,5 4,7-5,1 8,0
ca. 66	9,3 4,0 1450	1290-1300 1330-1360 0-1,0				300-600 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed ②b limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥	Torque-control ⑤ travel Control rod travel mm		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
1250	100,0-102,0 (98,0-104,0)	1290-1300*	600	75,0-80,0 (72,5-82,5)	100	120,0-140,0 (116,0-144,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 20,9 e 3

1. Edition

En

PE 12 P 110 A 520 LS 838-1
Komb.-Nr. 0 401 840 098

RQ 900 PA 663-6

supersedes

company MAN

engine D 2542 MTE

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

3,0-3,1
(2,95-3,15)

mm (from BDC)

Cyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,4+0,1	15,6-15,9	0,4(0,75)			
250	3,8-4,0	1,4-1,9	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm		Setting point		Test specifications		Setting point		Test specifications		Control rod travel	
rev/min 1	2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,4 4,0 1000	900-905 932-946 0-1,0	-	-	-	-	-	-

Torque-control travel

on flyweight assembly dimension a =

mm

Speed regulation: At

900-905 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	Control rod travel mm 3a	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	Control rod travel mm 7 6
850	156,0-159,0 (153,0-161,5)	-	-	-	-	-	-

Checking values in brackets

10.85

Testoil 4113

F13

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F13

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 17,4 a 5

En 2. Edition

PE 10 P 110 A 520/5 LS 846 RQV 250-1150 PA 673-1

Komb.-Nr. 0 401 849 183

1- 8- 7- 6- 3- 5- 2- 10- 9- 4

0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes 1.84

company MAN

engine D 2540 MTF

310 kW/2300 min⁻¹

MAN-Nr. 2-7372

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke		3,0-3,1 (2,95-3,15)		mm (from BDC)		Cyl. 10	
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning	
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm	
1	2	3	4	2	3	6	
1150	11,5+0,1	13,2-13,5	0,4(0,75)				
250	7,0-7,2	1,1-1,6	0,45(0,75)				

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1170	15,2-17,8	-	-	-	ca. 12	100	min. 8,6	350	2,0-2,5
ca. 65	10,5	1190-1200					250	7,0-7,2	850	6,5-6,7
	4,0	1315-1345					400-460	=2,0	1150	8,4
	1450	0-1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery		Rotational speed		Fuel delivery characteristics		Starting fuel delivery		Torque-control	
Control-rod stop		limitation		high idle speed		idle		travel	
Test oil temp 40°C (104°F)		intermediate speed				switching point			
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9	mm
LDA 1150	0,9 bar 132,0-135,0 (129,5-137,5)	1190-1200*	LDA 750	0,9 bar 122,0-126,0 (119,0-129,0)	100	150,0-170,0 (146,0-174,0)	-	-	-
			LDA 500	0 bar 115,0-118,0 (112,5-120,5)					

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

MAN 17,4 a 5

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
PE 10 P.. LS 846 +RQV.. PA 673-1	0,90	0	11,5-11,6	
		0,32	11,1-11,2	
			11,3-11,4	

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 17,4 b 9

2. Edition

En

PE 10 P 120 A 520/5 LS 850-1 RQ 750 PA 663-3

1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4

0-27-72-99-144-171-216-243-288-315° ± 0,5 ° (± 0,75 °)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 11.84

company MAN

engine D 2540 MLE

283 kW/1500 min⁻¹

Komb.-Nr. 0 401 849 174

MAN-Nr. 2-7247

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,0-3,1}
(2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,9+0,1	19,5-19,7	0,5(0,9)			
250	4,4-4,6	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,9 4,0 950	750-755 776-789 0 - 1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation At

750-755 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	Control rod travel mm	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	Control rod travel mm 7
700	195,0-197,0 (192,0-200,0)	-	-	-	-	-	-

Checking values in brackets

11.85

1980 08-10-1980

Test Specifications

Fuel Injection Pumps ① and Governors

PE 8 P 110 A 520 LS 851
Komb.-Nr. 0 401 848 083

RQV 250-1150 PA 670-3

supersedes
company MAN
engine D 2848 T
245,0 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,8+0,1	14,3-14,5	0,4(0,75)			
250	4,9-5,1	1,8-2,4	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1220	15,2-17,8	-	-	-	ca. 9	100	min. 6,5	250	1,1-1,3
ca. 62	9,8	1190-1200					250	4,9-5,1	450	2,9-3,3
	4,0	1270-1300							900	5,7-6,1
	1450	0-1,0				280-390			1150	7,8
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	1,0 bar 143,0-145,0 (140,5-147,5)	1190-1200*	LDA 700	1,0 bar 140,0-144,0 (137,0-147,0)	100	190,0-210,0 (186,0-214,0)	-	-
			LDA 500	0 bar 108,0-110,0 (105,5-112,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

MAN 14,5 a 1

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution difference mm (1)
PE 8 P..LS 851 + RQV..PA 670-3	1,0	0 0,29 0,23	10,8-10,9 9,6-9,7 10,5-10,6 9,9-10,2

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

②

Test Specifications

Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 14,5 a

2. Edition

En

PE 8 P 110 A 320 LS 851 RQ 250/1150 PA 688
 Komb.-Nr. 0 401 848 082
 1-8-7-2-6-3-5-4 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

superseded 12.84

company MAN

D 2848 T

engine 245 kW/2300 min⁻¹

MAN-Nr. 2-7353

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

A. Fuel Injection Pump Settings

Port closing at prestroke

 $3,0-3,1$
 $(2,95-3,15)$

mm (from BDC)

Cyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,8+0,1	14,3-14,5	0,4(0,75)			
250	4,9-5,1	1,8-2,4	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm 2		Setting point		Test specifications		Setting point		Test specifications		Control rod travel	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	9,8	1195-1210	250	5,0	100	min. 6,5	1150	10,8-10,9
VH	max. 46°			4,0	1280-1310			250	4,9-5,1	700	10,8-11,0
				1450	0-1,0			310	350 = 2,0		

Torque-control travel on flyweight assembly dimension a =

0

mm

Speed regulation: At 1195-1210 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	Control rod travel mm 3a	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	Control rod travel mm 6
LDA	1,0 bar	-		LDA	1,0 bar	100	185,0-205,0
1150	143,0-145,0 (140,5-147,5)			700	137,0-141,0 (134,0-144,0)	250	(181,0-209,0)
				LDA	0 bar		18,0-24,0
				500	108,0-110,0 (105,5-112,5)		(15,5-26,5)

Checking values in brackets

11.85

F19

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D. Adjustment Test for Manifold Pressure Compensator

MAN 14,5 a

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
PE8P..LS851 + RQ..PA688	1,0	0 0,29 0,23	10,8-10,9 9,7-9,8 10,5-10,6 9,9-10,1	

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications

Fuel Injection Pumps ① and Governors

PE 6 P 120 A 720 RS 3069

RQV 300-1200 PA 727

Komb.-Nr. 9 400 087 309

supersedes 3.85

company: Fiat Diesel

engine: 8210.11

220 kW

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,5-3,6$ mm (from BDC) RW = 9,0 - 12,0 mm
(3,45-3,55)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	12,4+0,1	20,1-20,3	0,5(0,9)			
300	6,0-6,2	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1045	15,2-17,8	-	-	-	ca. 10	100	min. 7,6	325	1,2-1,4
ca. 65	11,4	1040-1050					300	6,0-6,2	450	2,6-3,1
	4,0	1115-1145							800	5,7-6,0
	1250	0-1,0				350-455			1000	7,9
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery		Rotational speed		Fuel delivery characteristics		Starting fuel delivery		Torque-control	
Control-rod stop		limitation		high idle speed		idle switching point		travel	
Test oil temp. 40°C (104°F)		intermediate speed						Control rod travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm	
1	2	3	4	5	6	7	8	9	
LDA	0,7 bar	1040-1050*	LDA	0 bar	100	175,0-195,0	-	-	
1000	201,0-203,0		1000	158,0-160,0		(171,0-199,0)			
	(198,0-206,0)			(155,0-163,0)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

FIA 13,8 i 1

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 3069 +RQV..PA 727	0,70	0 0,36 0,31	12,4-12,5 10,0-10,1 11,6-11,7 10,6-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 10,1 b

2. Edition

En

US-PES 6P 110 A 720 RS 3086 US-RSV 400-1050 PO/492-1

Komb.-Nr. 9 400 231 174

Values apply to fuel-injection test tubing 9 681 271 004

supersedes 4.85

company John Deere

engine 6619 A

215 kW

Testo ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,45-3,55$
(3,40-3,60) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1050	13,9+0,1	21,4-21,6	0,4 (0,75)			
400	6,0-6,2	1,9-2,5	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			2 Lower rated speed Control lever deflection in degrees 7			3 Torque control Control rod travel mm 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					rev/min 8	Control rod travel mm 9		rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0		-	-	-	ca. 21	400 5,6		1050 13,9-14,0	
	X =						400 6,0-6,2		700 14,3-14,6	
							540-600 = 2,0			
ca. 42	12,9 1090-1100									
2a	4,0 1185-1215									
	1280 0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	
LDA 1050	1,0 bar 213,5-215,5 (210,5-213,5)	1090-1100*		LDA 700 1,0 bar 223,5-226,5 (220,0-230,0)		100	135,0-155,0	400	6,1
				LDA 500 0 bar 136,5-139,5 (133,0-143,0)					

Checking values in brackets

* 1 mm less control rod travel than col 2

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D. Adjustment Test for Manifold Pressure Compensator

DEE 10,1 b

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
US-PES6P..RS 3086 +RSV.. P0/492-1	0,47	0,26	14,1 - 14,2 12,9 - 13,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,0 i 2

40

2. Edition

En

PE 6 P 110 A 320 LS 3805-10 RQV 300-1150 PA 524-6
Komb.-Nr. 0 401 846 756

1- 6- 3- 5- 2- 4
0-75-120-195-240-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes 4.85

company: Daimler-Benz

engine: OM 421

148 kW (201 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,00-4,10$ mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,6+0,1	12,7-12,9	0,4 (0,8)			
300	9,1-9,3	1,6-2,2	0,4 (0,7)			
600	-	C, Sp. 4 u. 5	0,6 (0,8)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1190	15,2-17,8	-	-	-	ca. 23	100	min. 10,6	300	1,6-1,8
ca. 55	11,6	1190-1200					300	9,1-9,3	300	5,8-6,2
	4,0	1240-1270					430-490	= 2,0	1200	8,2-8,4
	1500	0 - 1,0							1260	10,0

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	cm ³ /1000 strokes 4	rev/min 5	cm ³ /1000 strokes 6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
1150	127,0-129,0 (124,0-132,0)	1190 - 1200	600	104,5-108,5 (101,5-111,5)	100	130,0-150,0 (126,0-154,0)	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4 86.

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Test Specifications

Fuel Injection Pumps ① and Governors

WPP 0C1/4 KHD 9,6 q

2. Edition

PES 6 P 110 A 720 RS 3104

RQV 300-1150 PA 549-2

Komb.-Nr. 0 402 046 761

supersedes 5.85

company: KHD

engine: BF 6L 413 FRC
220 kW/2300 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,80-2,90$
(2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	14,4+0,1	16,9-17,1	0,4(0,75)			
300	7,8-8,0	1,6-2,2	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1225	15,2-17,8	-	-	-	ca. 26	100	min. 9,3	250	0,5-0,8
ca. 60	13,4	1190-1200					300	7,8-8,0	550	3,6-4,2
	4,0	1315-1345							850	5,4-5,7
	1450	0 - 1,0				320-500			1150	7,8
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotations: speed limiter intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
LDA 1150	0,9 bar 169,0-171,0 (166,0-174,0)	1190-1200 *	LDA 600 0,9 bar 171,0-175,0 (168,0-178,0)		100	135,0-155,0 (131,0-159,0)	-	-	
			LDA 450 0 bar 123,0-125,0 (120,0-128,0)						

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

KHD 9,6 q

- 2 -

Test at n =

450

rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..RS 3104 + RQV..PA 549-2	0,90	0 0,5 0,36	14,4-14,5 12,5-12,6 13,9-14,0 12,7-12,9

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,0 m

5. Edition

En

PE 6 P 110 A 320 LS 3814
Komb.-Nr. 0 401 846 741

RQV 350-1150 PA 378

supersedes 3.85

company: Daimler-Benz

engine: OM 421

159 kW

1- 6- 3 - 5 - 2 - 4

0-75-120-195-240-315° ± 0,5° (± 0,75°)

Note VDT-I-401/102

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil: ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $4,00-4,10$ mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery ** cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 5
1130	12,7+0,1	12,3-12,5	0,4(0,8)	12,7+0,1	13,4-13,6	
350	8,2-8,4	1,3-1,9	0,4(0,7)	8,2-8,4	1,3-1,9	
600	-	-	0,6(0,9)	-	C, Sp. 4 u.5	
1150	-	-		-		
* with return throttle (1)		** without return throttle (2)				

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 16	100	min. 8,5	300	0,6-0,9
ca. 66	11,7	1180-1190					350	8,2 - 8,4	580	3,6-3,7
	4,0	1285-1315							870	5,2-5,3
	1400	0-1,0				375-485			1150	7,6
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(1) 1130	123,0-125,0 (120,0-128,0)	1170-1180*	-	-	100	130,0-150,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

MB 11,0 m

-2-

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 16	100	min. 8,5	300	0,6-0,9
ca. 66	11,7	1180-1190					350	8,2-8,4	580	3,6-3,7
	4,0	1285-1315							870	5,2-5,3
	1400	0-1,0				375-485			1150	7,6
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	9
(2) 1150	134,0-136,0 (131,5-138,5)	1170-1180*	1150	93,0-97,0 (90,0-100,0)	100	140,0-160,0 (136,0-164,0)	-
			600	116,0-120,0 (113,0-123,0)			-

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

**Reduced-delivery stop

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 v

1. Edition

En

PE 8 P 120 A 320 LS 3816-10 RQV 350 1150 PA 778 K

Komb.-Nr. 0 401 848 771

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

1-8-7-6-3-5-4 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

company Daimler-Benz

OM 422

engine 243,0 kW

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0-4,1$ mm (from BDC) cyl 1.8
(3,95-4,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	10,9+0,1	15,6-15,8	0,5(0,9)			
350	4,9-5,1	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1175	15,2-17,8	-	-	-	ca. 10	100	min. 6,0	300	0,2-0,4
ca. 61	9,9	1190-1200					350	4,5-4,6	580	3,3-3,5
	4,0	1240-1270							870	4,7-4,9
	1400	0-1,0				370-480			1150	8,0
						③a				

Torque control travel a = 1,60 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	156,0-158,0 (153,0-161,0)	1190-1200*	600	128,0-132,0 (125,0-135,0)	100	140,0-160,0 (136,0-164,0)	1150	10,9+0,2
			900	146,0-151,0 (143,0-154,0)			600	9,3+0,2
							900	10,1+0,2

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 MB 18,3 d 4

1. Edition

En

PE 10 P 110 A 320 LS 3818-12 RQV 350-1150 PA 678-1

Komb.-Nr. 0 401 849 723

1-8-7-6-3-5-2-10-9-4

0-27-72-99-144-171-216-243-288-315 ° ± 0,5 ° (± 0,75 °)

supersedes

company Daimler-Benz

OM 423

engine 261 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC) Cyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,0+0,1	12,2-12,4	0,4 (0,8)			
350	8,5-9,7	1,4-2,2	0,4 (0,7)			
600/900	-	C, Sp. 4 u. 5	0,6 (0,9)			
1150	-	C, Sp. 1 u. 2	0,6 (0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 14	100	min. 10,2	300	1,2-1,4
							350	8,5-8,7	580	3,6-3,9
ca. 64	11,0	1190-1200							870	5,2-5,5
	4,0	1240-1270							1150	7,8
	1400	0 - 1,0								
						350-500				
						③a				

Torque control travel a = 0,70 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	122,0-124,0 (119,0-127,0)	1190-1200 *	600	110-114,0 (107,0-117,0)	100	150,0-170,0 (146,0-174,0)	1150	12,0+0,1
							600	12,7+0,2
							900	12,4+0,2
1150	92,0-94,0 (89,0-97,0)		900	118,0-123,0 (115,0-126,0)				
	**							

Checking values in brackets

** Reduced-delivery stop

* 1 mm less control rod travel than col 2

12.85

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 21,9 b 3

1. Edition

En

PE 12 P 120 A 320 LS 3819-14 RSV 350-1150 PA 493-5

Komb.-Nr. 0 401 840 730

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315 ° ± 0,5 ° (± 0,75 °)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1.680 750 067

supersedes _

company: Daimler-Benz

engine: OM 424 A

390 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10
(3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,1+0,1	15,9-16,1	0,5 (0,8)			
350	4,8-5,0	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,3	-	-	-	ca. 14	100	min. 8,5	300	1,9-2,1
ca. 64	10,1	1190-1200					350	6,9-7,1	580	3,5-3,7
	4,0	1280-1310							870	5,2-5,4
	1375	0 -1,0				400-600			1150	7,7

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	0,6 bar 159,0-161,0 (156,0-164,0)	1190-1200 *	LDA 650	0,6 bar 160,0-166,0 (157,0-169,0)	100	150,0-170,0 (146,0-174,0)	-	-
1150	118,0-121,0 (115,0-124,0) **		LDA 500	0 bar 127,0-129,0 (124,0-132,0)				

Checking values in brackets

** Adjusted at the inner lever of the reduced-delivery stop

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

MB 21,9 b 3 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 12 P. LS3819-14 +RQV..PA 493-5	0,60	0 0,38 0,32	11,1-11,2 10,0-10,2 10,8-10,9 10,1-10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MWM 28,8 a

1. Edition

En

PE 8 P 120 A 520/5 RS 7109 RQV 300-1150 PA 756

Komb.-Nr. 0 402 648 814

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1.680 750 067

1-2 - 3- 4 - 7 - 8 - 5 - 6

0-30-90-120-225-255-315-345 ° ± 0,5 ° (± 0,75 °)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

company MWM

engine TBD 234 V 16

Testbench 4119

A. Fuel Injection Pump Settings

Port closing at prestroke $5,2-5,3$ mm (from BDC) RW = 9,0 - 12,0 mm
(5,15-5,35)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	12,0+0,1	19,1-19,3 (18,8-19,6)	0,5 (0,9)			
300	5,9-6,1	2,2-2,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 11	100 300	min. 7,4 5,9-6,1	300 325 390 470 1190	1,3-1,4 1,6-2,0 2,4-2,8 3,0-3,5 8,5
ca. 66	11,0 4,0 1400	1190-1200 1275-1305 0 - 1,0				310-530				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
		1190-1200*			100	200,0-240,0	-	-
The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet. The pumps operate in tandem. Komb.-Nr. 0 402 618 800								

Checking values in brackets

* 1 mm less control rod travel than col 2
10.85
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D. Adjustment Test for Manifold Pressure Compensator

MWM 28,8 a - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel ⁽¹⁾
	Gauge pressure = bar	Gauge pressure = bar	mm (1) diminution difference
PE 8 P.. RS 7109 + RQV .. PA 756	0,7	0 0,10	12,0-12,1 10,0-10,1 10,1-10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,7 b

1. Edition

En

PE 8 P 120 A 320 LS 7801

RQV 300-1050 PA 797

Komb.-Nr. 0 402 648 824

supersedes-

company Daimler-Benz

engine OM 442 LA

320 kW

1-8-7-2-6-3-5-4 je $45^{\circ} \pm 0,50^{\circ} (\pm 0,75^{\circ})$

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $5,2-5,3$ mm (from BDC) cyl.8; RW = 9.0 - 12.0 mm
(5.15-5.35)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
600	14,8+0,2	21,6-21,8	0,5(0,9)			
300	6,2-6,6	1,6-2,2	0,6(1,0)			
1050	-					
850	-	C, Sp. 4 u. 5	0,8 (1,2)			
500	-					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1090	16,5-18,0	-	-	-	ca. 19	100	min. 7,9	300	1,2-1,4
ca. 54	14,5	1095-1110					300	6,2-6,4	600	4,9-5,1
	4,0	1160-1190							1075	7,4-7,6
	1300	0 - 1,5				300-500			1100	8,0-8,2
						③a			1150	9,1

Torque control travel a = 0,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 600	0,68 bar 216,0-218,0 (213,0-221,0)	1095-1110*	LDA 850	1,15 bar 247,0-251,0 (244,0-254,0)	100	200,0-220,0 (196,0-224,0)	1050	15,5+0 2
LDA 1050	1,15 bar 234,0-237,0 (231,0-240,0)		LDA 500	0 bar 145,0-147,0 (142,0-150,0)			850	15,9+0 2

Checking values in brackets

* 1 mm less control rod travel than col 2
2.86

D. Adjustment Test for Manifold Pressure Compensator

MB 14,7 b

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	mm (1) diminution difference
PE 8 P .. LS 780 + RQV.. PA 797	0,68	0,31	14,8-15,0
		0,47	12,2-12,4
		0,82	13,8-14,0
		0,95	15,0-15,1
		1,10	15,4-15,6
		0,15	16,0-16,1
			11,5-11,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,7 b 1

1. Edition

En

PE 8 P 120 A 320 LS 7801 RQV 300-1050 PA 797-1

1-8-7-2-6-3-5-4 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1.680 750 067

supersedes-

company Daimler-Benz

engine OM 442 A

260 kW

Komb.-Nr. 0 402 648 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $5,20-5,30$ mm (from BDC) Cyl. 8: RW = $20,0-21,0$ mm
 $(5,15-5,35)$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	13,6+0,2	19,2-19,4	0,5(0,9)			
300	6,2-6,6	1,6-2,2	0,6(1,0)			
1050	-					
700	-	C, Sp. 4 u. 5	0,8(1,2)			
850	-					
500	-					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1090	15,2-17,8	-	-	-	ca. 19	100 300	min. 7,7 6,2-6,4	300 600 1075 1100 1150	1,2-1,4 4,9-5,1 7,4-7,6 8,0-8,2 9,1
ca. 53	11,6 4,0 1300	1095-1110 1155-1185 0-1,5				300-450				

Torque control travel a = 1,20 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
LDA 600	0,65 bar 192,0-194,0 (189,0-197,0)	1095-1110*	LDA 700	1,05 bar 205,0-209,0 (202,0-212,0)	100	175,0-190,0 (171,0-194,0)	1050 850 700	12,6+0,2 13,5+0,2 14,1+0,3
LDA 1050	1,05 bar 179,0-182,0 (176,0-185,0)		850	201,0-205,0 (198,0-208,0)				
			LDA 500	0 bar 145,0-147,0				

Checking values in brackets

(142,0-150,0)

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

MB 14,7 b 1

-2-

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	diminution difference mm (1)
PE 8 P..LS 7801 +RQV..PA 797-1	0,65	0,30	13,6-13,6
		0,40	11,9-12,1
		0,85	12,9-13,2
			13,7-13,8

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test specifications

Fuel injection pumps and governors

WPP 001/4 MTU 19,9 e 1

3. Edition

En.

PE 6 ZW 160/120 RS 1028/11
Komb.-Nr. 0 402 436 058

RQUV 300-900 ZWA 51 R

Replaces 9.85

Firm: MTU

Engine: 396

1- 2- 3 - 4 - 5 - 6

0-45-120-165-240-285 ° ± 0,5 ° (± 0,75 °)

Note VDT-W-A11g./7

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke		2,5-2,6 (2,45-2,65)	mm (from BDC)		Cyl. 6	
Rotational speed	Control-rod travel	Fuel delivery	Difference in fuel delivery	Fuel delivery	Spring pre-tension (torque-control valve)	
min ⁻¹	mm	Average value cm ³ /1000 strokes	cm ³ /1000 strokes	Checking values cm ³ /1000 strokes		
1	2	3	4	5		
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0		
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0		
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0		

Adjust the fuel delivery from each outlet according to the values in

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm	Control-rod travel min ⁻¹	Control lever deflection degrees	min ⁻¹	Control-rod travel mm	Control lever deflection degrees	min ⁻¹	Control-rod travel mm	min ⁻¹	Control-rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 79	900	18,0-19,0	ca. 27	375	8,0	ca. 21	300	8,0		-
ca. 79	700	18,0-19,0	(max. 30)							
	17,0	905-925		200	14,3-17,2		200	10,8-14,2		
	4,0	1000-1050		300	10,3-11,8		400	3,9-5,0		
	1100	0 - 2,0		500	2,5-3,7		485	590 = 0		
				590-720 = 0						

Torque control travel a = - mm

Speed regulation: At

1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹	cm ³ /1000 strokes	min ⁻¹	Idle stop	min ⁻¹	cm ³ /1000 strokes	min ⁻¹	cm ³ /1000 strokes
1	2	3		4	5	6	7
-	not known !	300		-	-	-	-
		RW = 8,0 mm					

Checking values in brackets

Test Specifications

Distributor-type

Fuel-injection Pumps

En

VE 6/11 F 1800 L 18

Overflow temperature 45° C

 supersedes 3.83
 company: Volvo
 engine:

0 460 416 001

 Setting of the pointer at a stroke of 1 mm in
 relation to outlet "A".

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

 Pre-stroke setting 0,2 mm $\pm 0,02(0,04)$

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,2-3,6 mm	0,74	
1.2 Supply-pump pressure	1500	6,0-6,7 bar (kgf/cm ²)	0,74	
1.3 Full-load delivery with charge-air pressure	500	47,0-49,0 cm ³ /1000 strokes	0	
Full-load delivery without charge-air pressure	1500	63,5-64,5 cm ³ /1000 strokes	0,74	3,0
1.4 Idle regulation	325	8,0-12,0 cm ³ /1000 strokes	0	2,0
1.5 Full-speed regulation	100	min. 72,0 cm ³ /1000 strokes	0	
1.6 Start	2040	19,5-25,5 cm ³ /1000 strokes	0,74	
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA = 0,74 bar	n = rev/min mm	1000 0,7-1,7(0,5-1,9)	1500 (2,7-4,1)	1800 4,5-5,3(4,2-5,6)
2.2 Supply pump LDA = 0,74 bar	n = rev/min bar (kgf/cm ²)	400 2,0-2,7		1800 6,9-7,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1800 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2140-2220	0	0,74
	2120	max. 6,0	0,74
	2040	(18,0-27,0)	0,74
	1800	57,2-59,8 (55,8-61,2)	0,74
	1500	(61,3-66,7)	0,74
	* 500	51,5-53,5 (49,1-55,9)	0,28
	500	(44,6-51,4)	0
switch-off	1800	0	
Idle stop	370-450 325	0 (5,5-14,5)	
2.4 Solenoid	cut-in voltage	min. 10 V	
		rated voltage 12 V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,9-6,2
MS	1,5-1,7
SVS	max. 4,2
A	5,8-10,8
B	10,4-15,6

Observations

 * LDA-stroke 4,0 mm
 Use adjusting nut
 (46) to correct.

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 VWW 1,6 x

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 1800 R 160-1 Overflow temperature 45° C
 O 460 494 150

supersedes -
 company: VW
 engine: 068.5 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,2-3,6 mm	0,75	
1.2 Supply-pump pressure	1500	5,5-6,1 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge-air pressure	1500	41,5-42,5 cm ³ /1000 strokes	0,75	2,5
Full-load delivery without charge-air pressure	600	24,5-25,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	475	6,0-10,0 cm ³ /1000 strokes	0	2,0
1.5 Full-speed regulation	1870	9,0-15,0 cm ³ /1000 strokes	0,75	
1.6 Start	100	min.35,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	1000	1500	1780
LDA=0,75 bar	mm	1,2-2,0 (0,9-2,3)	(2,7-4,1)	4,1-4,9 (3,8-5,2)
2.2 Supply pump	n = rev/min	600		1780
LDA=0,75 bar	bar (kgf/cm ²)	3,4-4,0		6,2-6,8
Overflow delivery	n = rev/min	600 (0 bar)		1780 (0,75 bar)
	cm ³ /10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1900	max. 4,0	0,75
	1870	(8,0-16,0)	0,75
	1780	39,5-41,5 (38,3-42,7)	0,75
	1500	(39,8-44,2)	0,75
	1000*	33,5-34,5 (31,8-36,2)	0,30
	600	(22,8-27,2)	0

switch-off elektr.	400	0	
-----------------------	-----	---	--

Idle stop	600	max.3,0	
	475	(4,0-12,0)	
End stop	350	min.32,0	
	450	max.38,0	

2.4 Solenoid	cut-in voltage	min.10,0 Volt	
		rated voltage 12 V.	

3. Dimensions

for assembly
and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,2-1,4
SVS	5,7
A	
B	

Observations

* LDA-stroke 4,5 mm
 Use adjusting nut
 (46) to correct.

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWW 1,6 x 1

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 1500 R 160-2 Overflow temperature 45° C
 O 460 494 151

supersedes -
 company: VW
 engine: 068.5 T
 Ind. Mot. 50 Hz

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1480	3,1-3,5 mm	0,75	
1.2 Supply-pump pressure	1480	5,4-6,0 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge-air pressure	1480	41,5-42,5 cm ³ /1000 strokes	0,75	2,5
Full-load delivery without charge-air pressure	600	24,5-25,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	475	6,0-10,0 cm ³ /1000 strokes	0	2,0
1.5 Full-speed regulation	1570	9,0-15,0 cm ³ /1000 strokes	0,75	
1.6 Start	100	min.35,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	1000	1480
LDA=0,75 bar	mm	1,2-2,0 (0,9-2,3)	(2,6-4,0)
2.2 Supply pump	n = rev/min	600	
LDA=0,75 bar	bar (kgf/cm ²)	3,4-4,0	
Overflow delivery	n = rev/min	600 (0 bar)	1480 (0,75 bar)
	cm ³ /10 s	55-138 (40-153)	55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1600	max. 4,0	0,75
	1570	(8,0-16,0)	0,75
	1480	(39,8-44,2)	0,75
	1000*	33,5-34,5 (31,8-36,2)	0,30
	600	(22,0-28,0)	0
switch-off electr.	400	0	
Idle stop	600	max.3,0	
	475	(4,0-12,0)	
End stop	350	min.32,0	
	450	max.38,0	
2.4 Solenoid	cut-in voltage	min.10,0 Volt	
		rated voltage 12 V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,2-1,4
SVS	5,7
A	
B	

Observations

* LDA-stroke 4,5 mm
 Use adjusting nut
 (46) to correct.

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 5,6 m

2. Edition

En

Testoil-ISO 4113

VE 6/12 F 1400 R 199-1

0 460 426 062

supersedes 10.85
MAN
company. D 0226 MLE
engine. 154 kW/2800 min⁻¹
MAN-Nr. 2-7643

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm \pm 0,02 (0,04)

see VDT-W-460/

1. Settings	Rot speed rev/min	Settings	Charge-air press bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	800	3,1 - 3,5 mm		
1.2 Supply pump pressure	800	5,2 - 5,8 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery with charge-air pressure	1000	132,5 - 133,5 cm ³ /1000 strokes		4,0
1.4 Idle speed regulation	300	15,0 - 21,0 cm ³ /1000 strokes		3,5
1.5 Start	1480	92,0 - 100,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	100	min. 90,0 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	800	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	500 1,4-2,2 (1,1-2,5)	800 (2,6-4,0)	1100 4,1-4,9 (3,8-5,2)	1400 4,5-5,3 (4,2-5,6)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	200 2,3 - 2,9	1400 7,3 - 7,9		
Overflow delivery	n = rev/min cm ³ /10 s	400 42-83 (27-98)	55-138 (40-153)		

2.3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)	3. Dimensions for assembly and adjustment mm
End stop	1650 1600 1480 1400 1000 630	max. 2,0 6,0-14,0 (5,0-15,0) (91,0-101,0) 123,5-126,5 (122,0-128,0) (130,0-136,0) 130,0-134,0 (128,2-135,8)		K KF MS SVS 2,0
switch-off				A B
Idle stop	300 350 400	(13,0-23,0) 1,0-7,0 max. 2,0		Observations
End stop	380 430	min. 120,0 max. 135,0		
2.4 Solenoid	cut-in voltage test voltage			

Test Specifications

Distributor-type

Fuel-injection Pumps

Testoil-ISO 4113

 VE 6/10 F 2400 L 216
 0 460 406 049

Overflow temperature 45° C

 superseded by
 company: VW
 engine: 087 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Tester:

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	1,4-1,8 mm	0,8	
1.2 Supply-pump pressure	1500	5,7-6,3 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	45,5-46,5 cm ³ /1000 strokes	0,8	max. 2,5
Full-load delivery without charge-air pressure	600	24,0-25,0 cm ³ /1000 strokes	0	
1.4 Idle regulation	415	6,0-10,0 cm ³ /1000 strokes	0	max. 2,0
1.5 Full-speed regulation	2675	13,0-19,0 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 40,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA = 0,8 bar	n = rev/min mm	1500 (0,9-2,3)	2000 2,7-3,5(2,4-3,8)	2400 4,1-4,9(3,8-5,2)
2.2 Supply pump LDA = 0,8 bar	n = rev/min bar (kgf/cm ²)	600 3,3-3,9		2400 7,9-8,5
Overflow delivery	n = rev/min cm ³ /10 s	600 (0 bar) 41-83(26-98)		2400 (0,8 bar) 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2850	max. 6,0	
	2675	(12,0-20,0)	0,8
	2575	25,0-35,0 (26,0-34,0)	0,8
	2400	37,5-39,5 (36,3-40,7)	0,8
	1500	(43,8-48,2)	0,8
	800 *	32,0-33,0 (30,3-34,7)	0,25
	600	37,0-40,0 (35,5-41,5)	0,8
	600	(22,3-26,7)	0
switch-off electr.	400	0	
Idle stop	750	max. 4,0	
	415	(4,0-12,0)	
End stop	230	min. 40,0	
	380	max. 30,0	
2.4 Solenoid	cut-in voltage	min. 10 Volt	
		rated voltage 12 V.	

3. Dimensions

 for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,3-6,6
MS	1,4-1,6
SVS	
A	
B	

Observations

 * LDA-stroke 5,7 mm
 Use adjusting nut
 (46) to correct.

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 VW 2,4 s

1. Edition

En

Testoil-ISO 4113

 VE 6/10 F 2400 L 216-2 Overflow temperature 45° C
 0 460 406 053

 supersedes -
 company: VW
 engine: 087 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	1,4-1,8 mm	0,8	
1.2 Supply-pump pressure	1500	5,7-6,3 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	45,5-46,5 cm ³ /1000 strokes	0,8	max. 2,5
Full-load delivery without charge-air pressure	600	24,0-25,0 cm ³ /1000 strokes	0	max. 2,0
1.4 Idle regulation	415	6,0-10,0 cm ³ /1000 strokes	0	
1.5 Full-speed regulation	2675	13,0-19,0 cm ³ /1000 strokes	0,8	
1.6 Start	100	min.40,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA = 0,8 bar	n = rev/min mm	1500 (0,9-2,3)	2000 2,7-3,5(2,4-3,8)	2400 4,1-4,9(3,8-5,2)
2.2 Supply pump LDA = 0,8 bar	n = rev/min bar (kgf/cm ²)	600 3,3-3,9	2400 7,9-8,5	
Overflow delivery	n = rev/min cm ³ /10 s	600 (0 bar) 41-83(26-98)	2400 (0,8 bar) 55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2850	max. 6,0	0,8
	2675	(12,0-20,0)	0,8
	2575	25,0-35,0(26,0-34,0)	0,8
	2400	37,5-39,5(36,3-40,7)	0,8
	1500	(43,8-48,2)	0,8
	800 *	32,0-33,0(30,3-34,7)	0,25
	600	37,0-40,0(35,5-41,5)	0,8
	600	(22,3-26,7)	0

 switch-off
 electr.

400

0

Idle stop

End stop

750

415

230

380

max. 4,0

(4,0-12,0)

min.40,0

max.30,0

2.4 Solenoid

cut-in voltage

min. 10 Volt

rated voltage 12 V.

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,3-6,6
MS	1,4-1,6
SVS	
A	
B	

Observations

 * LDA-stroke 5,7 mm
 Use adjusting nut
 (46) to correct.

Test Specifications Distributor-type Fuel-injection Pumps

Testoil-ISO 4113

 VE 4/9 F 2400 R 221
 0 460 494 179

 supersedes -
 company VW
 engine 086

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1250	2,1 - 2,5 mm		
1.2 Supply pump pressure	1250	4,0 - 4,6 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery with charge-air pressure	1500	31,5 - 32,5 cm ³ /1000 strokes		2,5(3,0)
1.4 Idle speed regulation *	A 800	3,0 - 4,0 cm ³ /1000 strokes		
1.5 Start	- 2600	11,0-17,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	100	min. 35,0 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	1250			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,0-1,8(0,7-2,1)	1250 (1,6-3,0)	1800 4,1-4,9(3,8-5,2)	2400 6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,1-2,7			2400 7,3-7,9
Overflow delivery	n = rev/min cm ³ /10 s	600 41-83(26-98)			2400 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	2800 2600 2500 2400 1500 600	max. 4,0 (10,0-18,0) 20,0-30,0 (21,0-29,0) 26,8-28,8 (25,6-30,0) (29,8-34,2) 20,2-23,2 (18,7-24,7)	
switch-off electr.	400	0	
Idle stop	A 550 B 375 B 425 C 525	max. 4,5 12,0-14,0(9,0-17,0) 5,5- 8,5(3,0-11,0) 7,0- 9,0	
End stop	200 350	min. 35,0 max. 30,0	
2.4 Solenoid	cut-in voltage test voltage	min. 10V rated voltage 12 V.	

3. Dimensions

 for assembly
and adjustment
mm

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	
A	
B	

Observations

 * Setting of the re-
sidual fuel delivery.
Setting of the idle
speed (LFG) according
to VDT-I-460/135

Test Specifications

Distributor-type

Fuel-injection Pumps

Testoil-ISO 4113

 VE 4/9 F 2250 R 223
 0 460 494 182

 superseded
 company VW
 engine 086 T

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm

see VDT-W-460/

1. Settings	Rot speed rev/min	Settings	Charge-air press bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1250	2,9-3,3 mm	0,75	
1.2 Supply pump pressure	1250	4,2-4,8 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery without charge-air pressure	1500	43,5-44,5 cm ³ /1000 strokes	0,75	2,5(3,0)
Full-load delivery with charge-air pressure	600	23,5-24,5 cm ³ /1000 strokes	0	
1.4 Idle speed regulation *	A 800	2,5-3,5 cm ³ /1000 strokes	0	
1.5 Start	2525	13,0-19,0 cm ³ /1000 strokes	0,75	
1.6 Full-load speed regulation	100	min. 35 cm ³ /1000 strokes	0	
1.7 Load-dependent start of delivery	1250		0	

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA = 0,75 bar	n = rev/min mm	1000 1,8-2,6(1,5-2,9)	1250 (2,4-3,8)	1800 4,7-5,5(4,4-5,8)	2250 6,1-6,9(5,8-7,2)
2.2 Supply pump LDA = 0,75 bar	n = rev/min bar (kgf/cm ²)	600 2,3-2,9	2250 7,0-7,6		
Overflow delivery	n = rev/min cm ³ /10 s	600 (0 bar) 41-83(26-98)	2250 (0,75 bar) 55-138(40-153)		

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	2700	max. 4,0	0,75
	2525	(12,0-20,0)	0,75
	2425	25,5-35,5 (26,5-34,5)	0,75
	2250	38,0-40,0 (36,8-41,2)	0,75
	1500	(41,8-46,2)	0,75
	1000 **	33,5-34,5 (31,8-36,2)	0,30
	600	32,0-35,0 (30,5-36,5)	0,75
	600	(21,8-26,2)	0
switch-off			
Idle stop	B 375	12,0-14,0(9,0-17,0)	
	B 425	5,5-8,5 (3,0-11,0)	
	C 525	7,0-9,0	
End stop	250	max. 40,0	
2.4 Solenoid	cut-in voltage	min. 10 Volt	
	test voltage	rated voltage 12 V.	

3. Dimensions

 for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,2-1,4
SVS	
A	
B	
Observations	
* Setting of the re- sidual fuel delivery.	
Setting of the idle speed (LFG) according to VDT-I-460/135	
** LDA-stroke 6,8 mm	

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VW 1,6 W 15

1. Edition

En

Testoil-ISO 4113

 VE 4/9 F 2400 R 224
 0 460 494 185

 supersedes
 company: VW
 engine: 086

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1250	2,1-2,5 mm		
1.2 Supply pump pressure	1250	4,0-4,6 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery with charge-air pressure *	1500	31,5-32,5 cm ³ /1000 strokes		2,5(3,0)
1.4 Idle speed regulation	A 800	3,0-4,0 cm ³ /1000 strokes		
1.5 Start	2600	11,0-17,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	100	min. 35,0 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	1250			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,0-1,8(0,7-2,1)	1250 (1,6-3,0)	1800 4,1-4,9(3,8-5,2)	2400 6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,1-2,7			2400 7,3-7,9
Overflow delivery	n = rev/min cm ³ /10 s	600 41-83(26-98)			2400 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800 2600 2500 2400 1500 600	max. 4,0 (10,0-18,0) 20,0-30,0 (21,0-29,0) 26,8-28,8 (25,6-30,0) (29,8-34,2) 20,2-23,2 (18,7-24,7)	
switch-off electr.	400	0	
Idle stop	A 550 B 375 B 425 C 525	max. 4,5 12,0-14,0 (9,0-17,0) 5,5-8,5 (3,0-11,0) 7,0-9,0	
End stop	200 350	min. 35,0 max. 30,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	3,2
A	
B	

Observations

* Setting of the residual fuel delivery.
Setting of the idle speed (LFG) according to VDT-I-460/135

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 5,9 a 3

1. Edition

En

PES 6 A 80 D 320 RS 1271
Komb.-Nr. 9 400 085 261

RSV 350-1250 A0B 2029-3

supersedes
company MWM
engine D 229-6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,2-2,3}{(2,15-2,35)}$ mm (from BDP) RW = 9,0-12,0 mm

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	8,2-8,3	5,0-5,1	0,25(0,4)			
350	5,9-6,1	0,7-1,0	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control-lever deflection in degrees rev/min 7 8 9			3 Torque control rev/min mm 10 11	
loose	Control rod travel mm	Control rod travel mm rev/min	-	-	-	ca. 26	350	5,5	1250	8,2-8,3
	x = 3,0						100	min.19,0		
ca. 50	7,2	1290-1300					350	5,9-6,1	500	9,8-9,9
	4,0	1320-1350					490-550	= 2,0		
2a	1450	0,3-1,7							800	9,1-9,4

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to 1 rev/min 3		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6 7		5 4a Idle stop rev/min Control rod travel mm 8 9	
1250	49,5-50,5 (48,0-52,0)	1290-1300*		500	50,5-52,5 (48,5-54,5)	100	19,0-21,0 mm RW	350	6,0
				800	51,0-53,0 (49,0-55,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

BOSCH

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H2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 FIA 2,6 d 1

1. Edition

En

PES 3 A 90 D 410 RS 2317
Komb.-Nr. 9 400 093 204

EP/RSV 325-1100 A 1 B 1015 L

supersedes—
company Fiat
engine —

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1080	8,5-8,6	6,0-6,1	0,3 (0,5)			
200	8,9-9,1	3,0-4,0	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 61	1100	16,0	without auxiliary spring			ca. 24	325	6,0-6,5	500 4,0	0 1,3-1,7
	1140	11,5								
	1190	5,5								
	1170	7,0-9,0	with auxiliary spring				100	19,0-21,0		
	1190	3,6-6,2					325	6,3-6,7		
1230	1,4-2,8	400				2,5-4,8				
2a	1280	0,3-1,0				450	1,0-3,0			
						520	0,3-1,0			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 9	
1080	60,0-61,0 (58,0-63,0)	1120-1130*	-	-	-	100	min.140,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

BOSCH

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H3

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 FIA 2,6 d 2

1. Edition

En

PES 3 A 90 D 410 RS 2317

EP/RSV 325-1200 A 1 B 2037 L

Komb.-Nr. 9 400 093 211

supersedes -

company Fiat

engine -

1-3-2 je $120^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $(2,10-2,30)$ mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1180	9,6-9,7	7,4-7,5	0,3 (0,5)			
200	8,9-9,1	3,0-4,0	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 63	1200 1250 1290	16,0 10,2 6,0	without auxiliary spring			ca. 22	325	6,0-6,5	-	-
2a	1230 1280 1300 1320	7,9-9,5 2,0-3,8 1,0-2,0 0,3-1,0					100 325 400 450 550	19,0-21,0 6,3-6,7 1,4-3,2 0,3-1,0 0,3-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
1180	74,0-75,0 (72,0-77,0)	1210-1220*	-	-	100	min.138,0	-	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

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H4

Test Specifications

Fuel Injection Pumps (1A)

and Governors

40

WPP 001/4 FIA 2,6 d 3

1. Edition

En

PES 3 A 90 D 410 RS 2317 EP/RSV 325-1200 A 1 B 2068 DL
Komb.-Nr. 9 400 093 212
1-3-2 je 120° ± 0,5° (± 0,75°)

supersedes -
company Fiat
34/1001
engine 54 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 mm (from BDC)
(2,10-2,30)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	9,8-9,9	7,5-7,6	0,3 (0,5)			
325	6,9-7,1	0,8-1,3	0,2(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	325	6,0	1180	9,8-9,9
	x =						100	19,0	800	9,9-10,2
							325	6,4-6,6	500	10,6-10,7
							490-550	= 2,0		
ca. 64	8,8	1240-1250								
2a	4,0	1270-1300								
	1400	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1180	74,5-75,5 (72,5-77,5)	1240-1250*	800	69,0-71,0 (66,5-73,5)	100	138,0-178,0 = 19,0-21,0 mm RW	0 -	-	-
			500	67,0-69,0 (64,5-71,5)					

Checking values in brackets

* 1 mm less control rod travel than col 2

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H5

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 F1A 3,5 e

1. Edition

En

PES 4 A 90 D 410 RS 2318 EP/RSV 325-1200 A 2 B 2037 L
Komb.-Nr. 9 400 093 214

supersedes
company Fiat
engine 44/1009
66 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25
(2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	10,0+0,1	7,7-7,8	0,3(0,5)			
325	6,9-7,1	0,8-1,3	0,2(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 28	325	5,5	500	10,0-10,2
	X =						100	min. 19,0	375	11,3-11,8
							325	5,9-6,1		
							480-540	2,0		
ca. 58	9,0	1240-1250								
②a	4,0	1300-1330								
	1450	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1180	76,5-77,5 (74,5-79,5)	1240-1250*	-	-	100	148,0-183,0 =19,0-21,0 min RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

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H6

Testoil ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 FAL 7,4 a 1

1. Edition

En

PES 6 A 90 D 410 RS 2361 RSV 325-1100 A 1 B 1015 L
Komb.-Nr. 9 400 093 200

supersedes -
company Fiat-Allis
engine -

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,15-2,25) mm (from BDC)
(2,10-2,30)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1080	9,6-9,7	7,2-7,3	0,3(0,5)			
200	8,9-9,1	3,0-4,0	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 67	1100 1160 1220	16,0 11,9 6,0	without auxiliary spring			ca. 26	325	5,5-6,0	1080	0
2a	1200	7,0-9,0				with auxiliary spring	100	19,0-21,0	500	0
	1240	3,6-5,5					325	5,8-6,2	400	1,3-1,7
	1270	1,2-3,6					400	2,0-4,0		
	1380	0,3-1,0					450	1,0-3,2		
							530	0,3-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5		rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1080	71,5-72,5 (69,5-74,5)	1120-1130*	-	-		100	min. 140,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 FAL 7,4 a 2

1. Edition

En

PES 6 A 90 D 410 RS 2361
Komb.-Nr. 9 400 093 201

EP/RSV 325-1150 A 1 B 1015 L

supersedes
company Fiat-Allis
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1300	10,7+0,1	8,6-8,7	0,3 (0,5)			
200	8,9-9,1	3,0-4,0	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 66	1150	16,0	without auxiliary spring			ca. 25	325	5,5-6,0	1130	0
	1210	10,4							500	0
	1250	5,7					100	19,0-21,0	400	1,3-1,7
2a	1220	7,8-11,0	with auxiliary spring				325	5,8-6,2		
	1250	4,0-7,3					400	2,2-4,6		
	1300	0,8-3,0					450	1,0-3,0		
	1400	0,3-1,0					550	0,3-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1130	85,5-86,5 (83,5-88,5)	1170-1180*	-	-	-	100	min.140,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

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H8

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 FAL 7,4 a 3

1. Edition

En

PES 6 A 90 D 410 RS 2361 Z
Komb.-Nr. 9 400 093 202

EP/RSV 325-1150 A 1 B 1015 L

supersedes
company Fiat-Allis
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15-2,25$
($2,10-2,30$) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	10,1+0,1	7,9-8,0	0,3 (0,5)			
200	8,9-9,1	3,0-4,0	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 66	1150 1210 1250	16,0 10,4 5,7	without auxiliary spring			ca. 25	325	5,5-6,0	1130	0
2a	1220	7,8-11,0				with auxiliary spring	100	19,0-21,0	500	0
	1250	4,0-7,3					325	5,8-6,2	400	1,3-1,7
	1300	0,3-3,0					400	1,8-4,4		
	1400	0,3-1,0					480	0,3-2,4		
							500	0,3-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm³/1000 strokes			rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1130	78,5-79,5 (76,5-81,5)	1170-1180*	-	-	100	min.140,0	-	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 6,1 b 2

2. Edition

En

PES 6 A 85 D 410/3 RS 2366

EP/RS 325/1325 AOB 709 DL
AOC 709 DL

supersedes 4.85

company KHD

engine BF 6 L 913

88 kW/2650 min⁻¹ (1)

118 kW/2650 min⁻¹ (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 -2,0
(1,85-2,05) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1325	11,4+0,1	7,6-7,7	0,3(0,45)			
200	8,9-9,1	1,6-2,2	0,3(0,05)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7	-	-	-	VH ca.66	325	6,0	850	11,9-12,1
		X = 7,0				FH ca.30	400	2,7-3,7	500	11,9-12,1
VH ca.66	10,4	1355-1365					800	2,7-2,9		
FH max.	4,0	1450-1480					1300	2,0-2,2		
2a	1630	0-1,0					1400	0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA 1325 (1)	0,5 bar 76,0-77,0 (74,0-79,0)	1355-1365*		LDA 500	0 bar 44,0-47,0 (42,0-49,0)	100	118,5-128,5 =18,0-18,4 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

The numbers denote the sequence of the tests

B. Governor Settings

1 Upper rated speed rev/min			Intermediate speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7	-	-	-	VHca.60	325	8,3	1325	11,7-11,8
	x =					FHca.35	550	3,5-4,0	800	12,8-13,1
VHca.60	9,5	1370-1380							600	13,1-13,4
FH max.	4,0	1460-1490								
2a	1600	0,3-0,7								

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
(2)		1370-1380*	LDA	0,6 bar	100	12,0-13,0	-	-	
LDA	0,6 bar		800	82,0-85,0		mm RW			
1325	80,0 - 82,0			(80,0-88,0)					
	(78,0-84,0)		LDA	0 bar					
			500	61,5-64,5					
				(59,5-66,5)					

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 700 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6A..RS2366 +EP/RS..A0B 709DL AOC 709DL	(1) 0,50	0,38 0,10	11,4-11,5 11,1-11,2 9,4- 9,8
	(2) 0,42	0,27	12,8-12,9 12,1-12,4

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

En

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 6,1 b 3

i. Edition

En

PES 6 A 85 D 410 RS 2366 EP/RS 325/1325 AOB 2057 DL
Komb.-Nr. 9 400 093 215

supersedes
company
engine

KHD

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1.9-2.0
(1.85-2.05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1325	11,4+0.1	7.6-7.7	0,3(0,5)			
200	8,9-9,1	1.6-2,2	0,25(0.45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
VHca.70	1325	16.0	without auxiliary spring			VHca.70	325	8.3	1325	11.4-11.5
	1400	12.5				FH	400	6.0-6.8	1100	11.9-12.1
	1500	6.9					600	3.5-4.0	550	12.6-12.8
VHca.70	1325	15.7-16.3	with auxiliary spring				1000	3.2-3.7		
FH max.	1340	15.2-15.8					1300	2.2-2.8		
2a	1550	2.8-4.8					1400	0		
	1630	0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	rev/min 5	cm ³ /1000 strokes	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1325	0.5 bar 76.0-77.0 (74.0-79.0)	1355-1365*	LDA 500	0 bar 44.0-47.0 (42.0-49.0)		100	18.0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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H12

D. Adjustment Test for Manifold Pressure Compensator

KHD 6.i b 3

-2-

Test at n = 700 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution difference mm (1)
PES 6 A..RS 2366 +EP/RS..AOB 2057 DL	0.50	0.37 0.09	11.4-11.5 11.1-11.2 9.4-9.8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 6,1 a 4

1. Edition

En

PES 6 A 85 D 410 RS 2415
Komb.-Nr. 9 400 093 227

RSV 325-1150 A1B 1111 L

supersedes -
company Deutz Argentinien
engine BF 6 L 913

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0
(1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,3±0,1	7,3-7,4	0,3 (0,5)			
325	7,9-8,1	0,9-1,3	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control lever deflection in degrees 7 rev/min 8			③ Torque control Control rod travel mm 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					Control rod travel mm 9			rev/min 10	
loose	800 0,3-1,0 x = 5,0		-	-	-	ca. 27	325 7,5		1150 11,3-11,4	
ca. 60	10,3 1190-1200 4,0 1220-1250 1350 0,3-1,7						100 min.19,0 325 7,9-8,1 540-610 = 2,0		500 12,0-12,1 800 12,2-12,5	

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		⑥ Rotational speed limit Note changed to) rev/min 3		③a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		⑤ Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7			
1150	72,5-73,5 (70,5-75,5)	1190-1200*	500	78,5-80,5 (76,0-83,0) 75,5-77,5 (73,0-80,0)		100	19,0-21,0 mm RW	-	-
			800						

Checking values in brackets

* 1 mm less control rod travel than col 2

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12.85

H14

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 A 95 D 410 RS 2416

RQ 300-1250 AB 1211 L

Komb.-Nr. 0 400 846 544

supersedes 9.85

company: KHD

engine BF 6 L 413 FR
123 kW/2500 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

1,9 - 2,0
(1,85-2,05) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	10,0+0,1	9,9-10,1	0,35(0,6)			
300	6,4-6,6	1,9-2,5	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1280	15,2-17,8	-	-	-	ca. 18	100	min. 8,0	250	1,0-1,2
ca. 50	9,0	1290-1300					300	6,4-6,6	500	3,2-3,5
	4,5	1350-1380							1000	6,2-6,4
	1500	0 - 1,0				370-485			250	8,3
						③a				

Torque control travel a = 0,30 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1250	99,0-101,0 (97,0-103,0)	1290-1300 *	600	91,5-94,5 (89,0-97,0)	100	120,0-130,0 (117,0-133,0) = 14,2-14,6 mm RW	1250	10,0+0,1
							600	10,2+0,1
							715	10,1+0,2
							765	10,0+0,3
					300	19,0-25,0 (16,5-27,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 4,4 e
3. Edition

En

PES 4 A 90 D 410 RS 2442 RQV 325-1050 AB 922 L

Komb.-Nr. 0 400 844 066

supersedes 4.85

company: OMB
engine: CO 3..

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,1 - 5,5	0,4			
	6	1,6 - 2,6				
200	9	1,9 - 2,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1060 1120 1220 1310	15,0-18,0 9,7-14,4 0-7 0	-	-	-	ca. 18	150 250 380 670	9,6-11,7 7,4-10,0 2,0- 5,0 0	1060	8,3
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥	Torque-control travel ⑤		
rev/min	cm³/1000 strokes	rev/min ④a	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1050	83,5-84,5 (81,5-86,5)	1090-1100*	-	-	100	15,0-15,6 mm RW	-	-
					Change-over point 200-270 U/min			

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications

Fuel Injection Pumps ① and Governors

PES 4 A 90 D 410 RS 2518 RQV 300-1400 AB 1018 L
Komb.-Nr. 0 400 844 072

supersedes 3.85
company OM-Brescia
engine 8340.04.300
74 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,8+0,1	7,0 - 7,1	0,3(0,45)			
300	7,9-8,1	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1410	15,0-18,3	-	-	-	ca. 12	100	min. 7,9	250	0-1,0
ca. 66	9,8	1440-1450					300	6,3-6,5	630	2,3-3,1
	4,0	1500-1530					600-760	=2,0	1020	4,5-4,9
	1650	0-1,0				3a	950 max.	1,0	1400	8,1

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5) Control rod travel mm	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	69,5-70,5 (67,5-72,5)	1440-1450*	-	-	100	16,2-16,6 mm RW	-	-
					300	9,0-15,0 (7,0-17,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 4,1 f

1. Edition

En

PES 4 A 80 D 410 RS 2523

RS 325/1400 AOB 2212 L

Komb.-Nr. 9 400 085 256

supersedes

company

engine

Deutz Argentinien
F 4 L 913

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,9-2,0}{(1,85-2,05)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1400	12,0+0,1	6,9-7,0	0,25 (0,4)			
325	8,4-8,6	1,0-1,3	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 X = 2,0	-	-	-	FH ca. 28	325	8,5	1400	12,0-12,1
VHca. 55	11,0	1440-1450					280	8,8-9,6	500	12,8-12,9
FHmax. 2a	4,0	1500-1530					420	5,6-6,4	1100	12,3-12,6
	1600	0,3-1,7					500	max. 4,4		
							1300	max. 3,8		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	69,0-71,0 (67,5-71,5)	1440-1450*		500	63,0-65,0 (60,5-66,5)	100	19,0-21,0 mm RW	-	-
				1100	66,0-68,0 (64,0-70,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 8,3 K 8

1. Edition

En

PE 6 A 95 D 410 RS 2525 RSV 250-1200 A 5 C 2199 L
Komb.-Nr. 0 400 676 176

supersedes
company DAF
engine DHTD 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC; RW = 9,0-12 mm)

Testoil-ISO 4113

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12,6+0,1	10,9-11,0	0,35(0,6)			
250	6,0-6,2	0,8-1,2	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7	-	-	-	ca 21	250	5,6	1000	12,6-12,7
	x = 4,25						100	min.19,5	400	12,8-12,9
							250	6,0-6,2	300	13,0-13,5
							490-550	= 2,0		
ca. 55	11,6	1230-1240								
	4,0	1325-1355								
2a	1490	0,3 - 1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to .)							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA 1000	0,7 bar 109,0-110,0 (107,0-112,0)	1230-1240 *		LDA 600	0 bar 85,5-86,5 (83,5-88,5)	100	125,0-135,0 (122,0-138,0) = 19,5- 21,0 mm RW	-	-
						250	8,0-12,0 (5,5-14,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

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H19

D. Adjustment Test for Manifold Pressure Compensator

DAF 8,3 K 8 -2 -

Test at n = 1000 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 A..RS 2525 + RSV..A5C 2199 L	0,70	0,30 0,26 0	12,6-12,7 12,3-12,4 11,9-12,1 11,6-11,7

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 5.1e1
1. Edition

En

PES 5 A 80 D 410 RS 2526 EP/RS 325/1400 AOB 699 DL
Komb.-Nr. 9 400 093 230
1-3-5-4-2 je $72^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes
company KHD
engine -

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1.9-2,0
(1.85-2,05) mm (from BDC)

Testoil-ISO 4113

Rotational speed rev./min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1400	11,2-11,3	6,5-6,6	0,25(0,4)			
325	8,4-8,6	1,0-1,3	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev./min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev./min				Control-lever deflection in degrees	rev./min	Control rod travel mm	rev./min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	VH ca. 60 FH	325	8,3	1400	11,2-11,3
		X =					300	8,4-9,1	700	11,8-12,1
							400	6,0-6,8	500	11,8-12,1
							550	3,5-4,0		
							1350	2,8-3,2		
VH ca. 60 FH max.	8,7 4,0	1400-1450 1500-1530								
2a	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to 1 rev./min							
rev./min	cm ³ /1000 strokes			rev./min	cm ³ /1000 strokes	rev./min	cm ³ /1000 strokes	rev./min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1400	64,5-65,5 (63,0-67,0)	1430-1440*		700	58,4-60,4 (56,4-62,4)	100	100,0-140,0	-	-
				500	55,9-57,9 (53,9-59,9)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.86

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H21

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 6,1 d 2

1. Edition

En

PES 6 A 80 D 410/3 RS 2527 RSV 325-900 A 1 C 602-2L
Komb.-Nr. 0 400 866 117

supersedes
compran KHD

engine F 6L 913
65kW/1800 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,9-2,0}{(1,85-2,05)}$ mm (from BDC) $RW = 9,0-12,0$ mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
880	12,2+0,1	5,1-5,2	0,25(0,4)			
325	9,3-9,5	0,9-1,5	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 23	325	9,4	-	-
	$X = 3,25$						140	min. 19,5		
ca. 46	11,2	920-930					325	9,3-9,5		
2a	4,0	945-975					365-425	= 2,0		
	1110	0,3-1,4						**		

The numbers denote the sequence of the tests ** Set idle-speed auxiliary spring at 2 mm control-rod travel,

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min				Idle		Control rod travel	
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	rev/min 9	mm 10
880	50,5-51,5 (49,0-53,0)	920-930	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

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Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 KHD 6,1 L

1. Edition

En

PES 6 A 80 D 410 RS 2527

RS 325/1400 A0B 2212 L

Komb.-Nr. 9 400 085 259

supersedes Deutz Argentinien
company F 6 L 913
engine 142 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{1,9-2,0}
(1,85-2,05) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
1400	12,0±0,1	6,9-7,0	0,25 (0,4)			
325	8,4-8,6	1,0-1,3	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	FH ca. 28	325	8,5	1400	12,0-12,1
		X = 2,0					280	8,8-9,6	500	12,8-12,9
							420	5,6-6,4	1100	12,3-12,6
							550	max. 4,4		
							1300	max. 3,8		
VHca. 55	11,0	1440-1450								
FHmax.	4,0	1500-1530								
②a	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load step		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1400	69,0-70,0 (67,5-71,5)	1440-1450 *		500	63,0-65,0 (60,5-66,5)	100	19,0-21,0 mm RW	-	-
				1100	66,0-68,0 (64,0-70,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 1 g 20

1. Edition

En

PES 3 A 80 D 410/3 RS 2540 EP/RSV 325-1075 A 1 B 1111 DL
Komb.-Nr. 9 400 093 400

supersedes
company KHD-Argentinien
engine F 3 L 913
Traktor

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 -2,0
(1,85-2,05) mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1050	12,0+0,1	6,2-6,3	0,3(0,45)			
325	7,9-8,1	0,4-0,9	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	325	5,5	1050	12,0-12,1
		X =					325	5,9-6,1	800	12,1-12,4
							495	555-2,0	500	12,8-12,9
ca. 57	11,0	1115-1125					800	max. 1,0		
2a	4,0	1160-1190								
	1250	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1050	61,0-63,0 (59,0-65,0)	1115-1125*	800	59,5-62,5 (59,0-63,0)	100	99,5-139,5 19,0-21,0 mm RW	5	-	-
			500	64,0-67,0 (63,5-67,5)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.86

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 FOR 5,9 d

6. Edition

En

PES 6 A 90 D 210 RS 2628 RSV 325-1200 AOB 2140 L
Komb.-Nr. 0 400 866 104 AOC 2140 L

supersedes 5.84

company: Ford

engine: Dover 363 T/C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

At port closing the locating pin must engage

Port closing at prestroke

2,7-2,8
(2,65-2,85)

mm (from BDC) in the slot of the pointer.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1175	11,5+0,1	8,4 - 8,5	0,3(0,45)			
350	5,1-5,3	0,5 - 1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	ca. 39	350	4,8	1175	11,5+0,1
	X =	4,0					100	min. 19,5	500	11,5+0,2
							350	5,2-5,4		
ca. 69	10,5	1240-1250					490-5	50 = 2,0		
⑤	4,0	1365-1395					625	max. 1,0		
	1540	0,3 - 1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2		4	5	6	7	8	9	
LDA	0,7 bar	1240-1250 *	LDA	0 bar	100	76,0 - 90,0	-	-	
1175	83,5-84,5 (81,5-86,5)		500	49,0 - 51,0 (47,0 - 53,0)		(73,0-93,0) = 19,5-21,0 mm RW			

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

FOR 5,9 d - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PES 6 A .. RS 2628 mit .. AOB 2140 L	0,7	0 0,48 0,30	11,5 - 11,6 10,1 - 10,2 11,1 - 11,2 10,3 - 10,5

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 4,1 d 3

2. Edition

En

PES 4 A 85 D 410/3 RS 2638 RSV 325-1400 A 8 C 707 L

Komb.-Nr. 0 400 864 060

supersedes 8.85
KHD
company BF 4 L 913
engine 78 kW / 2800 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,5-2,6$
(2,45-2,65) mm (from BDC) ; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,7+0,1	8,3 - 8,4	0,3 (0,45)			
325	8,4-8,6	0,9 - 1,5	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 22	325	8,0	1250	12,7-12,8
	X = 5,25						100	min. 19,5	500	13,6-13,7
ca. 62	11,7	1290-1300					325	8,4-8,6	1015	13,1-13,3
②a	4,0	1390-1420					660 -	720 = 2,0		
	1560	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5		rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1250	0,7 bar 82,5 - 83,5 (80,5 - 85,5)	1290-1300*	LDA 850	0,7 bar 84,5 - 86,5 (82,0 - 89,0)		100	105,0-115,0 (102,0-118,0) = 17,1-17,5 mm RW	-	-
			LDA 500	0 bar 59,5 - 61,5 (57,5 - 63,5)					

Checking values in brackets

* 1 mm less control rod travel than col 2

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D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure
increasing

KHD 4,1 d 3 - 2 -

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 4 A..RS 2638 + RSV..A 8 C 707 L	0,70	0 0,41 0,25	13,5 - 13,6 12,3 - 12,4 13,2 - 13,3 12,8 - 13,0

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 4,1 d

2. Edition

En

PES 4 A 85 D 410/3 RS 2638

RSV 325-1400 A 8 C 707-3 L

supersedes 8.85

company KHD

Komb.-Nr. 0 400 864 063

engine BF 4 L 913

78 kW/2800 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6
(2,45-2,65) mm (from BPCRW = 9,0 - 12,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1 250	12,7±0,1	8,3 - 8,4	0,3 (0,45)			
325	8,4-8,6	0,8 - 1,4	0,25 (0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3 - 0,7	-	-	-	ca. 16	325	8,0	1250	12,7-12,8
	x = 4,0						325	8,4-8,6	500	13,7-13,8
ca. 54	11,4	1290-1300					610 - 670 = 2,0		850	13,5-13,6
2a	4,0	1375-1405							950	13,2-13,4
	1540	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	rev/min 6	cm ³ /1000 strokes 7	8	rev/min 9	Control rod travel mm 10
LDA 1250	0,7 bar 82,5 - 83,5 (80,5 - 85,5)	1290-1300*	LDA 850	0,7 bar 84,5 - 86,5 (82,0 - 89,0)	100	115,0-125,0 (112,0-128,0) =18,4-18,8 mm RW	-	-	-
			LDA 500	0 bar 59,5 - 61,5 (57,5 - 63,5)					

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

KHD 4,1 d - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 4 A..RS 2638 +RSV..A8C 707-3L	0,70	0 0,39 0,25	13,7 - 13,8 12,3 - 12,4 13,5 - 13,6 12,8 - 13,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications

Fuel Injection Pumps ①

and Governors

PES 6 A 95 D 320 RS 2646
Komb.-Nr. 0 400 846 533

RQV 300-1300 AB 1163-1 R

supersedes 7.85

company: Vauxhall

engine: 330 T/C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,5-2,6}{(2,45-2,65)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
810	9,7-9,8	6,4-6,6	0,35(0,6)			
300	5,9-6,1	0,8-1,4	0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1440	15,2-17,8	-	-	-	ca. 17	100	min. 7,4	275	0,9-1,1
ca. 61	8,7	1350-1360					300	5,9-6,1	500	3,1-3,5
	4,0	1455-1485							1000	5,7-5,8
	1600	0-1,0				350-490			1300	8,0
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b intermediate speed rev/min ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min ④		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
810	63,5-65,5 (61,5-67,5)	1350-1360*	1200	71,5-74,5 (69,5-76,5)	100	97,0-107,0 (94,0-110,0)	-	-
			500	52,0-55,0 (50,0-57,0)		= 19,5-21,0 mm RW		
					300	8,0-14,0 (5,5-16,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 4,1 b

4. Edition

En

PES 4 A 90 D 320/3 RS 2659

RSV 325-1500 A2B 505-2 R

superseded 7.85

company MWM

engine D 266 B-4

Komb.-Nr. 0 400 864 057

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,95-3,05
(2,90-3,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	10,5+0,1	9,0-9,1	0,3 (0,45)			
325	6,4-6,6	1,1-1,7	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.27	325	6,0	-	-
	x = 5,5						100	min.19,5		
ca.66	9,5	1540-1550					325	6,4-6,6		
2a	4,0	1590-1620					460-520	= 2,0		
	1780	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
1500	89,5-90,5 (87,5-92,5)	1540-1550*	-	-	100	131,0-141,0 (128,0-144,0) = 19,5- 21,0 mm RW	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40
WPP 001/4 MWM 4,1b1
1. Edition

En

PES 4 A 90 D 320/3 RS 2659
Komb.-Nr. 0 400 864 057

RSV 325-1500 A 2 C 505 - 2 R

supersedes
company MWM
engine D 226 B-4

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,95-3,05$ mm (from BDC)
($2,90-3,10$)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1500	11,2-0,1	9,0-9,1	0,3(0,5)			
325	7,0-7,2	0,8-1,4	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees rev/min 7 8 9			3 Torque control rev/min Control rod travel mm 10 11	
loose	800	0,3-0,7 x = 4,75	-	-	-	ca. 24	325	6,6	-	-
ca. 61	9,5	1540-1550					100	min. 19,5		
2a	4,0	1615-1645					325	7,0-7,2		
	1780	0,3-1,4					465	525=2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6 7		5 4a Idle stop rev/min Control rod travel mm 8 9	
1500	89,5 - 90,5 (87,5 - 92,5)	1540-1550*	-	-	-	100	131,0-141,0 (128,0-144,0) = 19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

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Test Specifications Fuel Injection Pumps ② and Governors

PES 6 A 95 D 410 LS 2669
Komb.-Nr. 0 400 846 523

RQ 750 AB 1172 L

supersedes 9.84

company: MAN

engine: D 2566 ME
114 kW/1500 min⁻¹
MAN-Nr. 2-7365

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{1,5-1,6}
(1,45-1,65) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	12,1+0,1	11,8-12,0	0,35(0,6)			
250	5,9-6,1	0,9-1,5	0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		④		⑤		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
-	-	-	-	11,0 4,0	750-755 775-785	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 750-755 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel cm ³ /1000 strokes/mm
1	2	3	4	5	6	7
700	118,0-120,0 (116,0-122,0)	-	-	-	-	-

Checking values in brackets

Test oil ISO 4113

Test Specifications

Fuel Injection Pumps ① and Governors

PES 5 A 95 D 410 RS 2680 RQV 300-1150 AB 1217 L

Komb.-Nr. 0 400 845 082

1- 3- 5 - 4 - 2

0-72-144-216-288 $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes KHD

company F 5 L 413 FRW

engine 85,0 kW/2200 min⁻¹

Test ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{1,5-1,6} (1,45-1,65) mm (from BDC), RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	8,3+0,1	7,2-7,4	0,35(0,6)			
300	6,4-6,6	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 13	100	min. 8,0	300	1,3-1,5
ca. 64	7,3	1190-1200				320-415	300	6,4-6,6	500	3,4-3,6
	4,0	1230-1260							800	5,2-5,6
	1350	0-1,0							150	8,0

Torque control travel a = 1,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	72,0-74,0 (70,0-76,0)	1190-1200*	700**	80,5-83,5 (78,0-86,0)	100	120,0-130,0 (117,0-133,0)	1150	8,3+0,1
			700	98,5-101,5 (96,0-104,0)			500	9,7+0,1
							840	9,3+0,2
							1010	8,6+0,2

Checking values in brackets

* 1 mm less control rod travel than col 2

** reduced fuel delivery

10.85

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 9,6 m 1

1. Edition

En

PES 6 A 95 D 410 RS 2681 RQV 300-1150 AB 1217 L
Komb.-Nr. 0 400 846 545

supersedes-
company KHD
engine F 6 L 413 FRW
102,0 kW/2300 min⁻¹

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{1,5-1,6}
(1,45-1,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	8,3+0,1	7,2-7,4	0,35(0,6)			
300	6,4-6,6	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 13	100 300	min.8,0 6,4-6,6	300 500 800 1150	1,3-1,5 3,4-3,6 5,2-5,6 8,0
ca. 64	7,3 4,0 1350	1190-1200 1230-1260 0-1,0				320-415 ③a				

Torque control travel a = 1,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	72,0-74,0 (70,0-76,0)	1190-1200*	700**	80,5-83,5 (78,0-86,0)	100	120,0-130,0 (117,0-133,0)	1150 500 840 1010	8,3+0,1 9,7+0,1 9,3+0,2 8,6+0,2
			700	98,5-101,5 (96,0-104,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

** reduced fuel delivery

10.85

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Test Specifications Fuel Injection Pumps ① and Governors

WP 001/4 FOR 6,6a3

1. Edition

En

PES 6 A 95 D 410 RS 2688 RQV 350-1400 AB 1202-1L

Komb.-Nr. 9 400 085 263

supersedes

company Ford (FTO)

engine 6,6 l NA
140 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

 Port closing at prestroke 3,15-3,25
(3,20-3,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,1+0,1	7,1-7,3	0,35(0,6)			
350	6,4-6,6	0,7-1,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1420	15,2-17,8	-	-	-	ca. 14	100	min. 9,0	350	1,3-1,6
ca. 63	9,1 4,0 1700	1440-1450 1540-1570 0-1,0					350 540-600	6,4-6,6 =2,0	700 1100 1420	4,2-4,6 6,1-6,4 8,6

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	70,5-72,5 (68,5-74,5)	1440-1450*	500	50,5-53,5 (48,0-56,0)	100	112,0-122,0 = 19,0- 21,0 mm kW	-	-
					350	7,0-11,0 (5,0-13,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.8b

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FOR 6,6a2

1. Edition

En

PES 6 A 95 D 410 RS 2688 RqV 375-1300 AB 1208-1L

Komb.-Nr. 9 400 085 262

supersedes

company Ford

engine: 6,6 L TC
165 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,15-3,25
(3,10-3,30) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,1+0,1	8,6-8,8	0,35 (0,6)			
375	6,-/-b,9	1,0-1,4	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1345	15,2-17,8	-	-	-	ca. 16	100	min. 10,0	350	1,3-1,6
ca. 63	11,1	1340-1350					375	6,7- 6,9	700	4,1-4,5
	4,0	1450-1480					650-710	=2,0	1100	6,3-6,6
	1600	0-1,0							1345	8,6

Torque control travel a = 0,70mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed (2b) limitation intermediate speed		Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10
LDA 1300	0,6 bar 86,0-88,0 84,0-90,0)	1340-1350*	LDA 900	0,6 bar 86,0-89,0 (83,5-91,5)	100	115,0-125,0 =20,0- 21,0 mm RW	1300	12,1+0,1	1
LDA 600	0,6 bar 83,0-86,0 80,5-88,5)		LDA 600	0 bar 57,0-59,0 (55,0-61,0)			600	12,8+0,1	1
							800	12,6+0,2	2
							900	12,4+0,3	3

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

FUR 6,ba2

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A..RS 2688 + RQV..AB 1208-1L	0,60	0 0,40 0,25	12,8-12,9 10,6-10,7 12,2-12,3 11,0-11,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 3,9a1

1. Edition

En

PES 4 A 90 D 320 RS 2702 RSV 350-1150 A2B 2129-7R
Komb.-Nr. 9 400 085 268

supersedes

company MWM

engine D 229-4

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,65-2,75 mm (from BDC)
(2,60-2,80)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,5-9,6	7,0-7,1	0,3(0,5)			
350	5,9-6,1	1,1-1,5	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

Test oil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Control-lever deflection in degrees 7		Lower rated speed rev/min 8		3 Torque control rev/min 10		Control rod travel mm 11
Control rod travel mm 2	Control rod travel mm rev/min 3							Control rod travel mm 9				
loose	800	0,3-1,0	-	-	-	ca. 23		350	5,5	1150	9,5-9,6	
	$x = 3,75$							100	min.19,0	500	10,4-10,5	
Ca. 46	8,5	1190-1200						350	5,9-6,1	800	9,8-10,1	
2a	4,0	1225-1255						590-650	=2,0			
	1400	0,3-1,7										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8		Control rod travel mm 9
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7				
1150	70,0-71,0 (68,0-73,0)	1190-1200*	500	67,0-69,0 (64,5-71,5)		100	19,0-21,0 mm RW	-	-	
			800	69,0-71,0 (66,5-73,5)		350	11,0-15,0 (9,0-17,0)			

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 4,1 e 1

1. Edition

En

PES 4 A 85 D 410/3 RS 2707

RQV 300-1250 AB 1089-1 L

Komb.-Nr. 0 400 834 002

supersedes -

company: KHD

engine: BF 4 L 913 T

64 kW/2500 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{2,5-2,6}{(2,45-2,65)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,0+0,1	7,0-7,1	0,3 (0,45)			
300	4,9-5,1	1,0-1,6	0,25 (0,45)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1290	15,2-17,8	-	-	-	ca. 10	100	min. 6,4	250	0,5-0,7
ca. 66	11,0	1290-1300					300	4,9-5,1	450	3,1-3,3
	4,0	1375-1405					355-415	= 2,0	800	4,6-4,7
	1500	0 - 1,0							1100	6,6-6,8
									1300	8,7

Torque control travel a = 0,35 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1250	69,5-70,5 (67,5-72,5)	1290-1300*	650	58,5-60,5 (56,0-63,0)	100	120,0-130,0 (117,0-133,0) = 19,3-15,7 mm RW	1250 650 915 985	12,0+0,1 12,3+0,1 12,2+0,2 12,0-0,2

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 VAL 2,7 a

1. Edition

En

PES 3 A 95 D 320 RS 2711
Komb.-Nr. 0 400 873 037
1-2-3 je 120° ± 0,5° (± 0,75°)

RSV 325-1175 AOC 2178-3 R

supersedes

company Valmet
engine 309 DS 4
45 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6
(2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,8±0,1	8,1-8,3	0,35 (0,6)			
325	5,1-5,3	0,9-1,5	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 27	325	4,7	1200	10,8-10,9
	x = 5,25						100	min.19,5	500	11,1-11,2
ca. 49	9,8	1240-1250					325	5,1-5,3	910	10,9-11,1
2a	4,0	1335-1365					440-500	= 2,0		
	1500	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1200	80,5-82,5 (78,5-84,5)	1240-1250*	500	64,5-67,5 (62,0-70,0)	100	205,0-215,0 (202,0-218,0) =19,5-21,0 mm RW	-	-	-
					325	9,0-15,0 (6,5-17,5)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

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12.85

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FOR 6,6 f

1. Edition

En

PES 6 A 95 D 410 RS 2714 RQV 375-1300 A B 1208-1L
Komb.-Nr. 9 400 085 258

supersedes
company Ford
engine 6,6 TC
165 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 3,15-3,25 \\ (3,0-3,20) \end{matrix}$ mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,1+0,1	8,6-8,8	0,35(0,6)			
375	6,7-6,9	1,0-1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1345	15,2-17,8	-	-	-	ca. 16	100	min. 10,0	350	13,-1,6
ca. 63	11,1 4,0 1600	1340-1350 1450-1480 0-1,0					375 600-710=2,0	6,7-6,9	700 1100 1345	4,1-4,5 6,3-6,6 8,6

Torque control travel a = 0,70 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed rev/min ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1300	0,6 bar 86,0-88,0 (84,0-90,0)	1340-1350*	LDA 900	0,6 bar 86,0-89,0 (83,5-91,5)	100	115,0-125,0 = 20,0- 21,0 mm RW	1300 600 800 900	12,1+0,1 12,8+0,1 12,6+0,2 12,6+0,2
LDA 600	0,6 bar 83,0-86,0 (80,5-88,5)		LDA 600	0 bar 57,0-59,0 (55,0-61,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2
3.80

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D. Adjustment Test for Manifold Pressure Compensator

FOR 6,6 f

-2-

Test at n =

500

rev/min decreasing
increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	mm (1) diminution difference
PES6A..RS2714 +RQV..AB 1208-AL	0,60	0 0,40 0,25	12,8-12,9 10,6-10,7 12,2-12,3 11,0-11,2

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 6,1 m

En

1. Edition

PES 6 A 95 D 410 RS 2715
Komb.-Nr. 0 400 846 548

RQV 300-1250 AB 1158-1 L

supersedes-

company: KHD

engine: BF 6 L 913

140 kW/2500 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{1,9-2,0}{(1,85-2,05)}$ mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	14,0+0,1	9,5-9,7	0,35(0,6)			
300	4,9-5,1	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1265	15,2-17,8	-	-	-	ca. 9	100	min. 6,5	300	0,8-0,9
ca. 67	13,0	1290-1300					300	4,9-5,1	600	3,6-3,9
	4,0	1390-1420					360-420 = 2,0		900	5,2-5,4
	1550	0-1,0							1200	7,8-7,9
									1400	10,2

Torque control travel a = 0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤ travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1250	0,7 bar 94,5-96,5 (92,5-98,5)	1290-1300*	LDA 500	0 bar 53,0-55,0 (51,0-57,0)	100	115,0-125,0 (112,0-128,0)	1250 500	14,0+0,1 14,0+0,2

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

KHD 6,1 m

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel · diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A..RS 2715 + RQV..AB 1158-1 L	0,70	0 0,39 0,20	14,0-14,1 10,2-10,3 13,1-13,2 11,4-11,6

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 c

4. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1103
RQV 350-1300 MW 43-1

0 403 446 132

1-5-3-6-2-4 je 60° DHK 1 688 901 016
207 + 3 bar

supersedes 9.83

company IHC

engine DT 466 B
143,4 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 4,0-4,10 \\ (3,95-4,15) \end{matrix}$ mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	10,9+0,1	9,55-9,75	0,35(0,6)			
350	5,7-5,8	1,6-2,0	0,35(0,55)			
1300	10,9+0,1		0,65(0,7)			
500	9,4-9,5					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	8,0 1550	1440-1505 0-1,0				ca.13	100 350	min.9,0 5,7-5,8		
ca.61,5 ± 2,5	4,0	1470-1480				360-700 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 95,5-97,5 (93,5-99,5)		LDA 1300	0,7 bar 96,5-100,5 (94,5-102,5)	100	140-180		
			LDA 500	0 bar 63,5-65,5 (61,5-67,5)	350	16,0-20,0 (13,5-22,5)		
					220-280(210-290) 100(80)			Locking Unlocking

Checking values in brackets

* 1 mm less control rod travel than col. 2
12.85

BOSCH

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

IHC 7,6c

-2-

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1103 mit RQV.. MW 43-1	0,4	0,9 0 0,2	10,5-10,6 10,9-11,0 9,4-9,5 9,8-9,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Checking freedom of movement of control rod: with idle set to n = 350 1/min; increase engine speed to n = 1000 1/min; then operate at idle n = 350 1/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 VOL 6,0 t

2. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1004
RSV 325-1050 MW 4/308-1
0 403 476 020

supersede 7.84
company Volvo
engine TD 60 D
112 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,80-2,90$ mm (from BDC) RW = 9,0 - 12,0 mm
(2,75-2,95)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1020	10,8+0,1	8,65-8,85	0,35(0,6)			
325	4,9-5,0	1,0-1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	300	0,3-1,0 x = 5,5				ca.26	325	4,3	350	11,2+0,1
							325	4,9-5,0	500	10,8+0,1
							450-510	= 2,0	1050	10,8+0,1
ca.63		1090-1100 = 9,8 1130-1160 = 4,0 1300 = 0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		5 Idle stop	
Test oil temp. 40°C (104°F)		Note changed to . .) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	Control rod travel mm 9
1020	86,5-88,5 (84,5-90,5)	1090-1100*				100	min.140 (137)	325	4,9-5,0
						325	10,0-14,0 (7,5-16,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

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12.85

K1

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 MW 100/320 RS 1004
RQV 300...1400 MW 7
0 420 083 003

supersedes 5.82

company: Volvo

engine: TD 60 B

1 - 5 - 3 - 6 - 2 - 4 jc 60°

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,80-2,90 \\ (2,75-2,95) \end{matrix}$ mm (from BDC) RW = 10,5 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9,8 ^{+0,1}	7,55-7,75	0,35(0,6)			
300	4,7-4,9	0,95-1,35	0,35(0,55)			
1400	9,8 ^{+0,1}		0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max	1400	15,2-17,8				ca.9	100	min.6,3	300	1,3-1,4
	1650	0,0-1,0					300	4,7-4,9	450	2,6
ca.63	8,8	1440-1450				3a	390-450 = 2,0		1450	8,2
	4,0	1530-1560								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1000	75,5-77,5 (73,5-79,5)	1440-1450*	1400	79,0-83,0 (77,0-85,0)	100	120-130 (117-133)		
					300	9,5-13,5 (7,0-16,0)		
					100-230	(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

Testoil-ISO 4113

PES 6 MW 100/320 RS 1004
RQV 300 ... 1400 MW 27
Komb.-Nr. 0 403 446 119
1-5-3-6-2-4 = 0-60-120-180-240-300 $\pm 0,50^\circ$ (0,75°)

supersedes 5.82
company: Volvo
engine: TD 60 B

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,80-2,90$
(2,75-2,95) mm (from BDC) bei RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
100	9,9+0,1	7,7-7,9	0,35(0,6)			
300	4,7-4,9	0,95-1,35	0,35(0,55)			
1400			0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max	1400	15,2-17,8				ca. 9	100	min. 6,3		
	1650	0,0-1,0					300	4,7-4,9		
ca. 62	8,9	1440-1450				③a	390-450	= 2,0		
	4,0	1530-1560								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1000	77,0-79,0 (75,0-81,0)	1440-1450*			100	120,0-130,0 (117,0-133,0)		
					300	9,5-13,5 (7,0-16,0)		
					100-230	(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 d

3. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1107
RQV 350-1200 MW 43-2
U 403 446 136

DHK: 1 688 901 016
207 + 3 bar

supersedes 9.83
company: IHC
engine: DT 466 B
132,4 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Fuel injection test tubing 1 680 750 008

Port closing at prestroke $4,0-4,10$
(3,95-4,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,8+0,1	9,4-9,6	0,35(0,6)			
350	5,9-6,1	1,6-2,0	0,35(0,55)			
1200	11,8+0,1		0,65(0,7)			
500	10,4+0,1					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	8,0 1500	1355-1395 0-1,0				ca.15	100 350	min.9,0 5,9-6,1		
ca.61,5 ± 2,5	4,0	1375-1385				370-650 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min (4a)	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 800	0,9 bar 94,5-96,5 (92,5-98,5)		LDA 1200	,9 bar 96,0-100,0 (94,0-102,0)	100	140-180 (137-183)		
			LDA 500	0 bar 70,0-72,0 (68,0-74,0)	350	16,0-20,0 (13,5-22,5)		
					220-280	280(210-290) 100(80)		
							Locking Unlocking	

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing IHC 7,6d -2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
RS 1107 mit MW 43-2	0,39	0,17 0 0,90	11,5-11,6 10,7-10,8 10,4-10,5 11,8-11,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Checking freedom of movement of control rod:
with idle set to n = 350 1/min; increase engine speed to n = 1000 1/min; then operate at idle n = 350 1/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 IHC 7.6e
En 3. Edition

Testoil-ISO 4113

PES 6 MW 100/320 RS 1108
RQV 350-1200 MW 43-3
0 403 446 137
DHK: 1 688 901 016/207+3 bar
Fuel injection test tubing 1 680 750 008

supersedes
company: IHC
engine: 132,4 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,00-3,10}{(2,95-3,15)}$ mm (from BDC) RW = 9-12 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
850	11,5+0,1	9,1-9,3	0,35 (0,6)			
350	6,2-6,3	1,6-2,0	0,35 (0,55)			
1200	11,5+0,1		0,65 (0,7)			
500	10,0+9,1					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	8,0	1360-1400				ca. 17	100	min. 9,0		
	0-1,0	1450					350	6,2-6,3		
ca. 60,5	4,0	1380-1390				③a	370-650			
+ 2,5										

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,9 bar		LDA	0,9 bar	100	140,0-180,0		
850	91,0-93,0		1200	93,0-97,0		(137,0-183,0)		
	(89,0-95,0)			(91,0-99,0)	350	16,0-20,0		
			LDA	0 bar		(13,5-22,5)		
			500	60,0-62,0	220-280	(210-290)		
				(58,0-64,0)	100	(80)		
							Locking	
							Unlocking	

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

IHC 7,6e -2-

Pump/governor	Setting	Measurement	Control rod travel ^{diminution} difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1108 mit MW 43-3	0,42	0,19 0 0,90	11,1-11,2 10,3-10,4 10,0-10,1 11,5-11,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Checking freedom of movement of control rod:
with idle set to n = 350 1/min; increase engine speed to n = 1000 1/min; then operate at idle n = 350 1/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7.6f
En 4. Edition

Testoil-ISO 4113

PES 6 MW 100/320 RS 1108
RQV 350-1300 MW 43-4
0 403 446 138
Prüfdüsenhalterkombination 1 688 901 016
Fuel injection test tubing 1 680 750 008

supersedes _
company: IHC
engine: DT 466 B
154,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10
(2,95-3,15) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
900	12,6+0,1	10,7-10,9	0,35(0,6)			
350	6,5-6,6	1,6-2,0	0,35(0,55)			
1300	12,6+0,1		0,65(0,7)			
500	9,6-9,7					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	8,0 0-1,0	1440-1505 1580				ca.16	100 350	min.9,0 6,5-6,6		
ca.61,5 ± 2,5	4,0	1500-1510				3a	370-650			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 900	0,9 bar 107,0-109,0 (105,0-111,0)		LDA 1300	0,9 bar 112,5-116,5 (110,5-118,5)	100	140,0-180,0 (137,0-183,0)		
			LDA 500	0 bar 53,5-55,5 (51,5-57,5)	350	16,0-20,0 (13,5-22,5)		
					220-280	(210-290)		
					100	(80)		
							Locking Unlocking	

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

IHC 7,6f

-2-

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1108 mit MW 43-4	0,27	0,57 0 0,90	10,4-10,5 11,9-12,0 9,6-9,7 12,6-12,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Checking freedom of movement of control rod: with idle set to n = 350 1/min; increase engine speed to n = 1000 1/min; then operate at idle n = 350 1/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 IHC 7,6 L

3. Edition

En

Testo-ISO 4113

PES 6 MW 100/320 RS 1108
RQV 350-1300 MW 45
0 403 446 140

DHK: 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

supersedes 8.83

company: IHC

engine: DT 466 B
143,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,10}{(2,95-3,15)}$ mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,7+0,1	9,55-9,75	0,35 (0,6)			
350	5,9-6,0	1,6-2,0	0,35 (0,55)			
1300	11,7+0,1		0,65 (0,7)			
500	9,0-9,1					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	8,0 0-1,0	1440-1505 1550				ca. 14	100 350	min. 9,0 5,9-6,0		
ca. 61,5 ± 2,5	10,8 4,0	1360-1380 1475-1485				3a	380-700			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 95,5-97,5 (93,5-99,5)	1360-1380 *	LDA 1300	0,9 bar 99,5-103,5 (97,5-105,5)	100	140,0-180,0 (137,0-183,0)		
			LDA 500	0 bar 52,5-54,5 (50,5-56,5)	305	16,0-20,0 (13,5-22,5)		
					100-220(80-210)			

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

IHC 7,6 L

-2-

Pump/governor	Setting	Measurement	Control rod travel ^{diminution difference}
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1108 mit MW 45	0,20	0,57 0 0,90	9,5-9,6 11,1-11,4 9,0-9,1 11,7-11,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Checking freedom of movement of control rod:
with idle set to n = 350 1/min; increase engine speed to n = 1000 1/min; then operate at idle n = 350 1/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 VOL 6,0 r

3. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1111
RSV 325-1400 MW 2 A 314
0 403 476 016

supersedes 4.85
company Volvo
engine TAMD 60 C
184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,10-3,20$ mm (from BDC) $RW = 9,0-12,0$
($3,05-3,25$)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	13,0-0,1	12,1-12,3	0,35 (0,6)			
325	5,7-5,8	0,95-1,35	0,35(0,55)			
1400	13,0+0,1					
1000	10,5+0,1		0,5((0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.22	325	5,1-5,2	350	13,5+0,1
		x = 2,75					325	5,6-5,7	500	13,0+0,1
							100	min.19,0		
ca.60		1440-1450 = 12,0								
2a		1505-1535 = 4,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA	0,8 bar	1440-1450*		LDA	0,8 bar	100	130,0-140,0	325	5,6-5,7
1000	121,0-123,0			1400	120,0-124,0		(127,0-143,0)		
	(119,0-125,0)				(118,0-126,0)	325	9,5-13,5		
				LDA	0 bar		(7,0-16,0)		
				1000	83,0-85,0				
					(81,0-87,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

BOSCH

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K12

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

VOL 6,0r -2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
RS 1111 mit RSV.....3i4	0,3	0,53 0 0,80	10,7-10,8 12,7-13,0 10,5-10,6 13,5-13,1

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 n

2. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1112
RQV 350-1300 MW 46
O 403 446 141
DHK 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

supersedes 9.83
IHC
company DTI-466 C
engine 154,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,00-4,10$ mm (from BDC) RW = 9,0-12,0 mm
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	10,5+0,1	10,3-10,5	0,35 (0,6)			
350	5,4-5,5	1,8-2,2	0,35 (0,55)			
1300	10,5+0,1		0,65 (0,6)			
500	8,4+0,1					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	8,0 0-1	1440-1505 1600	ca. 20 ± 2,5	5 2,0 8,0	595-605 435-465	ca. 14	100 350	min. 9,0 5,4-5,5		
ca. 47,5 ± 2,5	4,0	1470-1480				3a	390-450			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed 4a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 103,0-105,0 (101,0-107,0)		LDA 1300	0,9 bar 107,0-111,0 (105,0-113,0)	100	RW 19-21 140-180 (137-183)		
			LDA 500	0 bar 63,5-65,5 (61,5-67,5)	350	18,0-22,0 (15,5-24,5)		
					220-280 (210-290 100 (80))			Locking Unlocking

Checking values in brackets

* 1 mm less control rod travel than col 2
11.85

BOSCH

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

IHC 7,6n -2-

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1112 mit MW 46	0,28	0,51 0 0,90	9,0-9,1 9,9-10,2 8,4-8,5 10,5-10,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and 1H hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Checking freedom of movement of control rod:
with idle set to n = 350 1/min; increase engine speed to n = 1000 1/min; then operate at idle n = 350 1/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 IHC 7,6r

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1112
 RQV 350-1200 MW 46-3
 O 403 446 163
 DHK: 1 688 901 016/207 + 3 bar
 Fuel injection test tubing 1 680 750 008

supersedes
 company IHC
 engine DTA-466 C
 179 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,95-4,05$
 (3,90-4,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	12,4+0,1	11,9-12,1	0,35(0,6)			
350	6,2-6,3	1,8-2,2	0,35(0,55)			
1200	12,4+0,1		0,65(0,7)			
500	10,7+0,1					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①		
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	re 10	in 11	mm 11
max.	8,0 0-1	1355-1395 1500				ca. 12	100 350	min. 9,0 6,2-6,3			
ca. 495 ± 2,5	11,4 4,0	1260-1270 1370-1380				300-450 ③a					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed rev/min ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 800	0,9 bar 119,0-121,0 (116,5-123,5)	1260-1270*	LDA 1200	0,9 bar 121,5-125,5 (119,5-127,5)	100 350	140,0-180,0 (137,0-183,0) 18,0-22,0 (15,5-24,5)		
			LDA 500	0 bar 86,5-88,5 (84,5-90,5)	220-280 100	(210-290) (80)		Locking Unlocking

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

IHC 7,6r -2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution difference mm (1)
RS 1112 mit MW 46-3	0	0,22 0,44 0,90	10,7-10,8 11,1-11,2 12,0-12,1 12,4-12,5

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve position, first set locking device.
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- High idle n = 1375 1/min. 21.0 - 29.0 cm³ / 1000 strokes, (20.0 - 30.0 cm³/1000 strokes) 0.9 bar.

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6r1

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1112
 RQV 350-1200 MW 64
 O 403 446 160
 DHK: 1 688 901 016/207 + 3 bar
 Fuel injection test tubing 1 680 750 008

supersedes
 company IHC
 engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,95-4,05$ mm (from BDC) RW = 9 - 12 mm
 (3,90-4,10)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,7+0,1	10,6-10,8	0,35 (0,6)			
350	5,9-6,0	1,8-2,2	0,35 (0,55)			
1200	10,9+0,1		0,65 (0,7)			
500	10,6+0,1					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	8,0 0-1	1355-1395 1450				ca. 11	100 350	min. 9,0 5,9-6,0		
ca. 45,5 ± 2,5	9,9 4,0	1245-1255 1340-1350				③a	370-450			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 800	0,8 bar 106,0-108,0 (104,0-110,0)	1245-1255 *	LDA 1200	0,8 bar 101,0-103,0 (99,0-105,0)	100	140,0-180,0 (137,0-183,0)	800	11,7+0,1
			LDA 500	0 bar 84,0-86,0 (82,0-88,0)	350	18,0-22,0 (15,5-24,5)	1200	10,9+0,1
					100-220 (80-210)		1000	11,7+0,1
							1150	10,9+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

D. Adjustment Test for Manifold Pressure Compensator

Test at $n =$ 500 rev/min decreasing pressure - in bar gauge pressure
increasing

IHC 7,6ri

-2-

Pump/governor	Setting	Measurement	Control rod travel ⁽¹⁾ diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1112 mit MW 64	0,23	0,35 0 0,80	10,9-11,0 11,3-11,6 10,6-10,7 11,7-11,8

Notes

(1) when $n =$

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than $n = 500$ l/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Checking freedom of movement of control rod: with idle set to $n = 350$ l/min; increase engine speed to $n = 1000$ l/min; then operate at idle $n = 350$ l/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 12,7 t 1

3. Edition

En

Testoil-ISO 4113

 PE 8 MW 100/720 LS 1117
 RQ 300/1000 MW 52
 0 403 548 005

1-8-7-2-6-5-4-3 je 45°

supersedes 1.85

company KHD

engine F 8 L 413 F
150 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

 3,10-3,20
 (3,05-3,25)

mm (from BDC)

RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,4±0,1	10,1-10,3	0,35(0,6)			
300	8,2-8,3	1,1-1,5	0,35(0,55)			
1000	11,3±0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 4		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
	Control rod travel mm 2										Control rod travel mm 12
520	19,2-20,8	520	20,0	10,3	1045-1060	300	8,2	100	min.10,2	600	12,4-12,5
1200	0-1,0			4,0	1080-1110			300	8,2-8,3	1000	11,3-11,4
										650	12,4-12,5
										975	11,3-11,4

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		Control rod travel mm 7
600	101,0-103,0 (99,0-105,0)			1000	91,0-93,0 (88,5-95,5)	100	130,0-140,0 (127,0-143,0)
						300	11,0-15,0 (8,5-17,5)
						100-230	(80-250)

Checking values in brackets

12.85

K20

BOSCH

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 12,7 t

3. Edition

En

Testoil-ISO 4113

PE 8 MW 100/720 LS 1117

RQ 300/1000 MW 52-1

O 403 548 009

1-8-7-2-6-5-4-3 je 45°

supersedes 1.85

company KHD

engine F 8 L 413 FZ

177 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\begin{matrix} 3,10-3,20 \\ (3,05-3,25) \end{matrix}$ mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	12,6+0,1	10,6-10,8	0,35(0,6)			
300	8,1-8,2	1,1-1,5	0,35(0,55)			
1150	12,6+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point		Test specifications				Test specifications				Control rod travel	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	19,2-20,8	550	20,0	10,4	1195-1210	300	8,1	100	min.9,7	650	12,6-12,7
1350	0-1,0			4,0	1270-1300			300	8,1-8,2	1150	11,4-11,5
								350-380	= 2,0	850	12,0-12,4

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
650	106,0-108,0 (104,0-110,0)			1150	96,0-98,0 (93,5-100,5)	100	130,0-140,0 (127,0-143,0)
						300	11,0-15,0 (8,5-17,5)
						100-230	(80-250)

Checking values in brackets

Test Specifications Fuel Injection Pumps ② and Governors

Testoil-ISO 4113

PE 8 MW 100/720 LS 1117
RQ 300/1150 MW 53
0 403 548 006
1- 8- 7- 2- 6- 5- 4- 3
0-45-90-135-180-225-270-315

superseded 12.85

company KHD

engine BF 8 L 413 FZT
206 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,10-3,20$
(3,05-3,25) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	13,3+0,1	12,3-12,5	0,35(0,6)			
300	7,5-7,6	1,1-1,5	0,35(0,55)			
1150	12,3+0,1		0,5(0,7)			
400	12,4+0,1					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6	Setting point rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	11,3	1195-1210 1230-1260	300	7,5	100 300	min.9,1 7,5-7,6	800 1150 650	13,3-13,4 12,3-12,4 13,3-13,4
1350	0-1,0										

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
LDA 800	0,8 bar 123,5-125,5 (121,5-127,5)		LDA 1150	0,8 bar 118,0-120,0 (115,5-122,5)	100	140,0-150,0 (137,0-153,0)
			LDA 400	0 bar 96,0-98,0 (93,5-100,5)	300	11,0-15,0 (8,5-17,5)
					100- 230	(80-250)

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure
increasing

KHD 12,7t

-2-

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	diminution difference mm (1)
LS 1117 mit MW 53	0,8	0,19 0,13 0	13,3-13,4 13,0-13,1 12,6-12,7 12,4-12,5

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 13,4d1

40

1. Edition

En

Testoil-ISO 4113

PE 8 MW 100/720 LS 1117
RQV 425-900 MW 66
0 403 548 013
1-8-7-2-6-5-4-3 je 45°

supersedes -
company KHD
engine F S L 513 0 PT.
153 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 3,10-3,20 \\ (3,05-3,25) \end{matrix}$ mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,1+0,1	10,7-10,9	0,35(0,6)			
425	5,0-5,1	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max	900 1150	15,2-17,8 0-1,0				ca.22	425 100	5,0-5,1 min.7,5		
ca.31	10,1 4,5	940-950 980-1010				450-750 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
900	107,0-109,0 (105,0-111,0)	940-950 *	550	108,0-110,0 (106,0-112,0)	100 425	130,0-140,0 (127,0-143,0) 13,0-17,0 (11,0-20,0)	900 550 700	11,7+0,1 11,6+0,1 11,3+0,2

Checking values in brackets

* 1 mm less control rod travel than col 2

Note: Test elec. unlocked starting fuel delivery (EES) with 24 Volts.

12.85

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 13,4d

2. Edition

En

Testoil-ISO 4113

PE 8 MW 100/720 LS 1117
RQ 300/1075 MW 53-1
0 403 548 008
1-8-7-2-6-5-4-3 je 45°

supersedes 10.84

company: KHD

engine: BF 8 L 513 T

177 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3, 10-3, 20
(3, 05-3, 25) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	13,4+0,1	12,3-12,5	0,35(0,6)			
300	8,0-8,1	1,6-2,0	0,35(0,55)			
1075	12,1+0,1		0,5(0,7)			
400	12,6+0,1					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
550	19,2-20,8	550	20,0	11,1 4,0	1120-1135 1155-1185			100 300	min. 9,6 8,0-8,1	600 640 950 1075	13,4-13,5 13,4-13,5 12,1-12,2 12,1-12,2
1250	0-1,0										

Torque-control travel on flyweight assembly dimension a = 0,45 mm

Speed regulation: AI

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm ³ /1000 strokes/mm 7	
LDA 600	0,8 bar 123,5-125,5 (121,5-127,5)			LDA 1075	0,8 bar 114,0-116,0 (111,5-118,5)	100	140,0-150,0 (137,0-153,0)
				LDA 400	0 bar 96,0-98,0 (93,5-100,5)	300	16,0-20,0 (13,5-22,5) 100-230 (80-250)

Checking values in brackets

12.85

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L1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

KHD 13,4d

-2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
LS 1117 mit MW 53-1	0	0,8 0,25 0,19	12,6-12,7 13,4-13,5 13,2-13,3 12,8-12,9

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD13,4 a

3. Edition

En

Testoil-ISO 4113

PE 8 MW 100/720 LS 1118

RQV 300-1150 MW 56

0 403 548 007

1-8-7-2-6-5-4-3 je 45°

supersedes 10.84

company: KHD

engine: BF 8 L 513

222 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $3,10-3,20$ mm (from BDC) $RW = 9,0 - 12,0$ mm
 (3,05-3,025)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,2+0,1	13,3-13,5	0,35(0,6)			
300	8,7-8,8	1,6-2,0	0,35(0,55)			
1150	13,6+0,1		0,5(0,7)			
450	13,2+0,1					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1175 1400	15,2-17,8 0-1,0				ca.22	300	6,7-6,8		
ca. 55	12,6 4,0	1190-1200 1300-1330				320-650 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤ Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
LDA 700	0,8 bar 133,0-135,0 (131,0-137,0)	1190-1200*	LDA 1150	0,8 bar 129,0-131,0 (126,5-133,5)	100	140,0-150,0 (137,0-153,0)	700	14,2+0,1
			LDA 450	0 bar 104,0-106,0 (101,5-108,5)	300	16,0-20,0 (13,5-22,5)	1150	13,6+0,1
							750	14,2+0,1
							1100	13,6+0,1
					100-230 (80-250)			

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

KHD 13,4a

-2-

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
LS 1118 mit MW 56	0,36	0,26 0 0,80	13,9-14,0 13,4-13,7 13,2-13,3 14,2-14,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

Test ISO 4113

PES 6 MW 100/720 RS 1133
RQ 300/1325 MW 65
0 403 446 166
1-5-3-6-2-4 je 60°

supersedes

company KHD

engine BF 6 L 913 BW
124 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,50-3,60$ mm (from BDC) $RW = 9-12$ mm
(3,45-3,65)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1325	10,5+0,1	9,6-9,8	0,35(0,6)			
300	7,6-7,7	1,0-1,4	0,35(0,5)			
850	10,5+0,1		0,35(0,7)			
500	9,1-9,2					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Control rod travel mm 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	19,2-20,8	700	20,0	9,5	1375-1385 4,0 1445-1475			100 300	min.8,2 7,6-7,7		
1550	0,1-1,0							320-450			

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery: on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
LDA	0,7 bar	100	LDA	0,7 bar	100	120,0-140,0 (117,0-143,0)
1325	96,0-98,0 (94,0-100,0)		850	87,0-91,0 (85,0-93,0)		
			LDA	0 bar	300	10,0-14,0 (8,0-16,0)
			500	47,0-49,0 (45,0-51,0)		

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

KHD 6,1n6

-2-

Pump/governor	Setting	Measurement	Control rod travel ^{diminution} difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1133 mit RQ..MW 65	0,45		10,2-10,3
		0,35	9,3-9,6
		0	9,1-9,2
		0,70	10,5-10,6

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Note: Test elec. unlocked starting fuel delivery (EES) with 24 Volts.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC7,6 r7

En 1. Edition

Testoil ISO 4113

PES 6 MW 100/320 RS 1134

RQV 350-1200 MW 46-1

O 403 446 161

DHK: 1 688 901 016/207+3 bar

Fuel injection test tubing 1 680 750 008

supersedes _

company: IHC

engine: DTA 466 (172 kW)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $2,95-3,05$ mm (from BDC) RW = 9-12 mm
 (2,90-3,10)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
800	13,2+0,1	12,05-12,25	0,35(0,6)			
350	6,8-6,9	1,8-2,2	0,35(0,55)			
1200	13,2+0,1		0,65(0,7)			
500	10,2+0,1					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	8,0 0-1	1355 1460				ca. 13	100 350	min. 9,0 6,8-6,9		
ca. 47,5 ± 2,5	12,2 4,0	1250-1260 1395-1405				370-500				
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar	1250-1260*	LDA	0,7 bar	100	140-180		
800	120,5-122,5 (118,5-124,5)		1200	125,5-129,5 (123,5-131,5)		(137-183)		
			LDA	0 bar	350	18,0-22,0 (15,5-24,5)		
			500	65,5-67,5 (63,5-69,5)		100-220 (80-210)		

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

IHC 7,6r7 -2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
RS 1134 mit MW 46-1	0	0,24 0,52 0,70	10,2-10,3 10,9-11,0 12,5-12,6 13,2-13,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Checking freedom of movement of control rod:
with idle set to n = 350 1/min; increase engine speed to n = 1000 1/min; then operate at idle n = 350 1/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6r6
En 1. Edition

Testoil-ISO 4113

PES 6 MW 100/320 RS 1134
RQV 350-1200 MW 46-2
0 403 446 162
DHK: 1 688 901 016/207+3 bar
Fuel injection test tubing 1 680 750 008

supersedes
company IHC
engine DTA 466 C
156 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,95-3,05$
 $\cdot (2,90-3,10)$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	12,2+0,1	10,6-10,8	0,35(0,6)			
350	6,3-6,4	1,8-2,2	0,35(0,55)			
1200	12,2+0,1		0,65(0,7)			
500	10,0+0,1					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	8,0 0-1	1355-1395 1460				ca. 17	100 350	min 19 6,3-6,4		
ca. 48,5 ± 2,5	11,2 4,0	1255-1265 1370-1380				370-500 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
LDA 800	0,8 bar 106,0-108,0 (104,0-110,0)	1255-1265*	LDA 1200	0,8 bar 110,5-114,5 108,5-116,5)	100	140-180 (137-183)			
			LDA 500	0 bar 67,5-69,5 65,5-71,5)	350	18,0-22,0 (15,5-24,5)			
					220-280 (210-280) 100 (80)				Locking Unlocking

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

IHC 7,6r6

-2-

Pump/governor	Setting	Measurement	Control rod travel· diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1134 mit MW 46-2	0,24	0,45 0 0,80	10,5-10,6 11,6-11,9 10,0-10,1 12,2-12,3

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Checking freedom of movement of control rod:
with idle set to n = 350 1/min; increase engine speed to n = 1000 1/min; then operate at idle n = 350 1/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 FIA 13,8 v

1. Edition

En

PE 6 P 120 A 720 RS 167
Komb.-Nr. 9 400 097 201

RSV 350-750 P 7/377 R

supersedes -
company Fiat
engine 8210

Values only apply to test nozzle-and-holder assembly
0 681 443 022 and fuel-injection test tubing 1 680 750 026

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1
(1,95-2,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
730	11,8+0,1	16,4-16,6	0,6 (1,05)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 48	750	16,0	without auxiliary spring			ca. 27	350	7,5	730	0
	780	11,6							500	0
	810	6,2							400	1,2-1,8
2a	800	5,6-10,0	with auxiliary spring				350	7,3-7,7		
	830	3,0-5,8					380	4,4-6,2		
	860	0,6-2,8					430	0,7-3,0		
	910	0-1,0					500	0-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes	3	4	5	6	7	8	9	
1	2	3	4	5	6	7	8	9	
730	164,0-166,0 (160,0-170,0)	-	-	-	100	270,0-300,0 =19,0-21,0 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

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1.86

L11

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MWM 39,8 b

3. Edition

En

Testoil-ISO 4113

(1) PE 6 P 120 A 300/3 LS 267

(2) PE 6 P 120 A 320 LS 268 RSUV 300-750 P 9 A 332/1 R

(3) PE 6 P 120 A 300 LS 330

supersedes **7.83**

company: Südbremse

engine: D/TD/TBD 602 V 12

TBD 602 V 12 S

 $1 - 5 - 3 - 4 - 2 - 6 (1) / 1 - 6 - 2 - 4 - 3 - 5 (2 \text{ u. } 3)$
 $0 - 15 - 120 - 135 - 240 - 255 \pm 0,5^\circ (+0,75^\circ) / 0 - 15 - 120 - 135 - 240 - 255 \pm 0,5^\circ (+0,75^\circ)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Komb.-Nr. 0 401 806 046 (1)

0 401 876 214 (2)

0 401 816 052 (3)

A. Fuel Injection Pump Settings

Port closing at prestroke

 $2,3 - 2,4$
 $(2,25 - 2,45)$

mm (from BDC)

RW = 21,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	13,0+0,1	26,0 - 26,4 (25,7 - 26,7)	0,5 (0,9)			
300	5,5-5,7	2,6 - 3,2	0,8 (1,2)			

Values only apply to test nozzle-and-holder assembly
 1 688 901 019 and fuel-injection test tubing 1 680 750 074.

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca.29	300	5,1	700	13,0+0,1
	X =	5,25					100		325	14,2+0,6
							300	5,5-5,7	450	13,0+0,1
ca.70 ⑤	12,0	790 - 800					315-375	5=2,0 mm		
	4,0	815 - 845								
	980	0,3 - 1,7								

The numbers denote the sequence of the tests

without (1 u. 3) and

C. Settings for Fuel Injection Pump With Fitted Governor

(2)

② Full-load stop		⑥ Rotational-speed limit.		③a Fuel delivery characteristics		Starting		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to rev/min							
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
						100	19,5-21,0		
The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet. Pumps (1) and (2) or (1) and (3) operate in tandem.									

Checking values in brackets

* 1 mm less control rod travel than col 2

2.86

BOSCH

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 10,0 f 2
3. Edition

En

Testoil-ISO 4113

PE 6 P 110 A 320 RS 273 Y RQV 250-1100 PA 238/2 R
..RS 273-1 Y
0 401 846 379

supersedes 7.83
company: Volvo
engine TD 100 B
220 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,6 - 2,7}
(2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,0+0,1	14,8 - 15,1	0,4(0,8)			2,5 ± 0,1 (2,2 - 2,9)
250	5,1-5,3	1,1 - 1,5	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1260	15,2-17,8	-	-	-	ca. 11	100 250	min. 6,6 5,1-5,3	350 600 1290	1,7-2,3 3,7-4,3 8,8
ca. 40	9,0 4,0 1350	1140-1150 1225-1255 0 - 1,0				3a	310-370=2,0 mm			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point mm RW ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	mm RW 7	rev/min 8	Control rod travel mm 9
LDA 700	0,7 bar 147,5 - 150,5 (145,0 - 153,0)	1140-1150*	LDA 700	0 bar 111,0-115,0 (108,0-118,0)	100	20,5-21,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

VOL 10,0 f 2

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..RS 273 Y + ..PA 238/2R	0,7		10,0 - 10,1
		0	8,2 - 8,3
		0,40	9,6 - 9,7
		0,20	8,7 - 8,9

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 40,5 f

1. Edition

En

PE 8 P 130 A 920/5 RS 293-2 RS 250/1000 P 1 A 422 R

1 - 6 - 4 - 5 - 8 - 3 - 2 - 7

0 -75 -90 -120-210-225-315-345° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company KHD

engine BA 16 M 816

Komb.-Nr. 0 401 878 117

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
750	13,5+0,1	35,8-36,1	0,6(1,0)			
250	6,1-6,3	2,0-2,6	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	FH ca.23	250	6,2	1000	13,5-13,6
	X = 5,0						400-460	2,0	420	14,7-15,3
VH ca.5									600	13,5-13,6
FH max.	12,5	1040-1050				150-200				
2a	4,0	1095-1125								
	1260	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Carry out adjustment on engine		1040-1050*		-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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2.86

L15

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 a

2. Edition

En

PE 12 P 120 A 920/5 RS 294 RSUV 300-750 P 9 A 322 R

superseded 6.83

1-10-5-7-2-11-6-8-3-12-4-9 je $30^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

company KHD

Values only apply to test nozzle-and-holder assembly

engine BA 12 M 816

1 688 901 019 and fuel-injection test tubing 1 680 750 067

Komb.-Nr. 0 401 870 049

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,0-2,1

Port closing at prestroke

(1,95-2,15)

mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,0+0,1	20,1-20,3	0,5(0,9)			
300	5,8-6,0	1,0-1,6	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	mm 11
loose	800	0,3-1,0	-	-	-	ca. 31	300	7,5	750	12,0-12,1
	X = 4,0						300	7,9-8,1	450	12,0-12,1
							340-400	2,0	325	13,2-13,8
ca. 68	11,0	770-780								
2a	4,0	810-840								
	950	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		cm ³ /1000 strokes 2	6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		cm ³ /1000 strokes 5	Starting fuel delivery Idle rev/min 6		cm ³ /1000 strokes 7	5 Idle stop rev/min 8		Control rod travel mm 9
Not known. Carry out adjustment on engine			770-780*		-		-	-		-	-		-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4f
2. Edition

En

PE12 P120 A920 RS 294

RSUV 300-1000 POA 348 R

1-10-5-7-2-11-6-8-3-12-4-9- je 30° ±0,5° (±0,75°)

superseded by 6.85
KHD

company BA 12 M 816

engine Komb.-Nr. 0 401 870 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,10$ mm (from BDC) = RW 9,0 - 12,0 mm
(1,95-2,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	14,9±0,1	31,0-31,4	0,5 (0,9)			
300	6,3-6,5	2,2-2,8	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 18	300	5,9	1000	14,9-15,0
		X=1,0					300	6,3-6,5	270	16,2-16,8
ca. 60	13,9	1040-1050					325-385	= 2,0	400	14,9-15,0
2a	4,0	1060-1090								
	1190	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
Not known. Carry out adjustment on engine		1040-1050*	-	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 d

2. Edition

En

PE 12 P 120 A 920 RS 294 RS 250/1000 P 17422 R

1-10-5-7-2-11-6-8-3-12-4-9 je $30^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

superseded 6.83

company KHD

engine BA 12 M 816

Komb.-Nr. 0 401 870 060

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC) RW = 9,0 - 12,0 mm
(1,95-2,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	14,9+0,1	29,5-29,9	0,5(0,8)			
300	6,0-6,2	2,0-2,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 22	250	6,1	1000	14,9-15,0
	X = 5,0						250	6,0-6,2	420	16,2-16,8
							430-490	2,0	550	14,9-15,0
ca. 58	13,9	1040-1050				150-200				
2a	4,0	1120-1150								
	1250	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	5	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2		4	5		6	7	8	9
Not known. Carry out adjustment on engine		1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Testoil ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 30,4 k

1. Edition

En

PE 12 P 130 A 920 RS 294-1 RSUV 300-600 P 8 A 322 R

1-10-5-7-2-11-6-8-3-12-4-9 je $30^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

superseded

company KHD

engine BA 12 M 816

Komb.-Nr. 0 401 870 076

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

2,0-2,1

Port closing at prestroke

(1,95-2,15)

mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
600	13,5+0,1	35,8-36,1	0,6(1,0)			
300	6,1-6,3	2,0-2,6	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 30	300	5,7	600	13,5-13,6
	X = 4,0						300	6,1-6,3	220	14,7-15,3
ca. 65	12,5	640-650					310-370	=2,0	350	13,5-13,6
	4,0	655-685								
	820	0,3-1,7								
2a										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8		4a Control rod travel mm 9	
Not known. Carry out adjustment on engine		640-650*		-		-		-		-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 15,2 c

2. Edition

En

PE 6 P 120 A 420 LS 324 RS 250/1000 P 1/422 R

supersedes 6.83

Komb.-Nr. 0 401 876 221, 0 401 876 217

company KHD

Values only apply to test nozzle-and-holder assembly

engine BA 6 M 816

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$ mm (from BDC)
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,9+0,1	29,5-29,9	0,5(0,9)			
250	6,0-6,2	2,0-2,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Control lever deflection in degrees 7 8 9			3 Torque control rev/min 10 11	
	Control rod travel mm 2	Control rod travel mm rev/min 3								
loose	800	0,3-1,0	-	-	-		250	6,1	1000	14,9-15,0
	x = 5,0						250-310	= 2,0	420	16,2-16,8
ca. 58 FH voll	13,9	1040-1050				150-200			550	14,9-15,0
2a	4,0	1105-1135								
	1200	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 4a Idle stop rev/min 8		Control rod travel mm 9
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7			
Not known. Carry out adjustment on engine		1040-1050*	-	-	-	100	19,5-21,0 mm RW	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 15,2 b

2. Edition

En

PE 6 P 120 A 420 LS 324

RSV 250-1000 P7A 304 R

supersedes 6.83

Komb.-Nr. 0 401 876 226

company KHD

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

engine BA 6 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
750	14,9+0,1	29,5-29,9	0,5 (0,9)			
250	6,0-6,2	2,0-2,6	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	250	5,6	1000	14,9-15,0
	x = 5,5						250	6,0-6,2	300	16,2-16,8
							345-405	= 2,0	450	14,9-15,0
ca. 67	13,9	1040-1050								
2a	4,0	1080-1110								
	1250	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
Not known. Carry out adjustment on engine		1040-1050*	-	-	100	19,5-21,0 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 K 18

1. Edition

En

PE 6 P 110 A 320 RS 372-1

RSV 250-1100 P 5 A 508-3

Komb.-Nr. 0 401 876 308

supersedes

DAF

company DKTD 1160

engine 191 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
850	12,0+0,1	13,7-13,9	0,4 (0,75)			
250	6,6-6,8	0,7-1,2	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7	-	-	-	ca. 21	250	6,2	850	12,2-12,3
	x = 4,25						250	6,6-6,8	400	12,2-12,4
							655-715	= 2,0	300	12,5-13,0
ca. 51	11,0	1140-1150								
2a	4,0	1275-1305								
	1425	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA 850	0,7 bar 137,0-139,0 (134,5-141,5)	1140-1150*		LDA 600	0 bar 128,0-130,0 (125,5-132,5)	100	245,0-285,0 (241,0-289,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

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L22

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 K 18

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6P..RS 372-1 + RSV..P5A 508-3	0,70	0 0,30 0,26	12,0-12,1 11,4-11,5 11,8-11,9 11,5-11,7

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 15,2 e

2. Edition

PE 6 P 120 A 420 LS 399 RSV 250-1000 P 7 A 460

Komb.-Nr. 0 401 876 236

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 6.83

KHD

company BA 6 M 816

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
750	14,9+0,1	29,5-29,9 (29,3-30,1)	0,5(0,9)			
250	6,0-6,2	2,0-2,6 (1,7-2,9)	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 24	250	5,6	1000	14,9-15,0
	x = 5,75						250	6,0-6,2	300	16,2-16,8
							345-405	2,0	450	14,9-15,0
ca. 67	13,9	1040-1050								
2a	4,0	1080-1110								
	1250	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to ;							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
LDA	0,7 bar	1040-1050*	-	-	100	19,5-21,0 mm RW	-	-	
Not known. Carry out adjustment on engine									

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH

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